THE BRITISH JOURNAL

OF

OPHTHALMOLOGY

FEBRUARY, 1948

COMMUNICATIONS

THE SURGICAL TREATMENT OF PTERYGIUM*

BY

ARTHUR D'OMBRAIN

SYDNEY, N.S.W.

OF recent years investigations into the pathology and aetiology of pterygium have shed much light upon the true nature of this condition. It is about eight years since it was brought to my notice that some American surgeons regarded the sub-mucosal portions of pterygium as the active part of the process; I learnt that after shaving the head of the pterygium from the cornea, they then dissected and excised the sub-mucosa from the under surface of the conjunctiva before transplanting the head. At the time, although I had been operating upon pterygia for some fifteen years, I was in a state of some concern about my results and had already made one modification in the McReynold's operation, in an attempt to reduce the proportion of recurrences. This first

* Received for publication, November 26, 1947. N.B.—The first draft of this paper was submitted to the Editors in the early summer of the year 1946. Unfortunately it was lost in transit to the printers.

modification was the deliberate leaving of a bare area of sclera between the corneal margin and the edge of the downturned conjunctiva, instead of approximating this edge to the cornea. The objective was to give the raw corneal surface time to heal before the conjunctiva grew up to the limbus again.

This modification improved my results but there were still recurrences. Adoption of the American idea of a complete dissection and excision of the whole of the sub-epithelial tissues underlying the affected area of conjunctiva, in conjunction with the leaving of a peri-limbal strip bare of conjunctiva, practically eliminated recurrences, as well as making the transplantation a comparatively flat procedure instead of a thick lump, for the transplanted or tucked tissue consisted now of the thickness of the epithelial or mucous layer only.

During the course of my experiments in the evolution of a more efficient operation, I had tried a certain number of simple excisions of the head of the pterygium, without transplantation. These simple excisions were about 70 per cent. successful as regards non-recurrence.

When, however, to the principles of excision of the head, and the leaving of a peri-limbal bare strip some 4 mm. in width, there was added the technique of complete dissection and excision of all underlying sub-mucosal tissue, right back to the caruncle, uniform success came my way at last and has remained with me for the past seven or eight years. Before describing in detail the steps of the operation I will make some reference to the nature and cause of pterygium.

To my mind the best discussion of the nature of pterygium ever written is the brilliant paper by Dr. Sabri Kamel in the *Brit. Jl. of Ophthal.*, of September, 1946, and I would hesitate to speak further on the subject except for the fact that my not inconsiderable experience in this field (some 1,500 operations) only serves to confirm Dr. Kamel's masterly synthesis and, in one or two items, to add to it.

Kamel maintains that pterygium is an irritative disease due to exposure and not primarily a degeneration. With this I quite agree, but would stress the fact that it is secondarily a degeneration. The older authors, notably Professor Fuchs, considered pinguecula to be the forerunner of pterygium and both to be degenerations. As I say, I consider Kamel to be more accurate in diagnosing an inflammatory origin but with the conception of the identical nature of pinguecula and pterygium I am in entire agreement, despite those who claim to have observed pterygium in the absence of pinguecula. The explanation of this, in my opinion, is simple, for I believe pinguecula and pterygium to

be, essentially, one and the same process aetiologically, anatomically and pathologically. What has been taken to be a pterygium in the absence of pinguecula is, in my opinion, simply a pinguecula situated at or in contiguity with the corneal limbus.

The pathological anatomy of pinguecula is that of a dense mass of fibrous tissue undergoing hyaline degeneration with deposition of amorphous hyaline material and excessive development of yellow elastic tissue. In its terminal stage it is a kind of localised tissue death, paralleling the displacement of normal connective tissues by excessive accumulation of elastic tissue found in old age in any part of the body's connective tissue strata. But, in pinguecula, old age is not a predominating factor; on the contrary, in Australia at any rate, pinguecula occurs in great frequency in young adults and even in adolescents. There must, therefore, be some other explanation or, perhaps it would be more accurate to say, some additional explanation than that of senility.

The stroma or sub-conjunctival portion of pterygium presents a similar histo-pathological picture to that of pinguecula, namely, an extensive aggregation of fibrous tissue containing numerous elastic fibres and patches of amyloid and hyaline degeneration. But as Kamel points out, when this contracting fibrous tissue becomes anchored at one end to the unyielding corneal tissue, the looser conjunctival tissue becomes pulled towards the cornea.

The cornea itself becomes involved in the inflammatory process and also in a secondary degeneration, with the presence of elastin, down to and including Bowman's membrane.

In optic section from the slit-lamp, the sub-mucosal portion of both pterygium and pinguecula shows up as a raised gelatinous-looking mass of greyish-yellow colour, interspersed with yellow, grey and white granules. Even in the corneal portions of pterygium, behind the grey apical extremity, optic section shows a yellowish tinge due to elastin in the deeper epithelial layers.

As is well known, the first corneal changes (best observed with the slit-lamp microscope) consist of grey patches at or slightly anterior to Bowman's membrane. The number and forward extension of these isolated patches form a useful guide to the activity of the process; when many and far advanced and especially when vascularised, the pterygium is active; when few or absent beyond the grey apical border of the growth, the pterygium is not in a state of rapid expansion.

It has long been recognised that climate is the main predisposing cause of pterygium, but it has not been so widely emphasised that the same applies to pinguecula. Most European authors stress senility as the pinguecula's main cause; as has been stated above, in Australia pinguecula is extremely common in young adults and not rare in adolescence.

The high incidence of pterygium in hot countries led most of us to assume that its occurrence was in direct ratio to the heat of the climate. However, a few years ago investigations carried out by some American ophthalmologists showed pterygium to be no more frequent in the hottest States than in others. Later, observers in both America and Australia (notably Banks Smith and Frank Flynn) have found an association between pterygium and the water vapour content of the atmosphere; where the humidity percentage is high, pterygium is less common than in places where the average annual percentage is low.

It would thus appear that pterygium is a reaction to the irritation of dry, hot, dusty atmospheres; its location in between the upper and lower lids, and particularly in the medial area where there is an anatomical pocket formed by the nasal, frontal and malar bones, gives credence to this view. Moreover, the bulbar conjunctiva lateral to the cornea, situated as it is immediately below the lacrymal gland, receives the tears first and freshest.

I have pinguecula in both eyes; they formed in my twenty-second year when I possessed my first motor bicycle and before I learnt the wisdom of wearing goggles; my late father, an ophthalmic surgeon, noticed the pinguecula and made me wear goggles. The pinguecula are situated midway between the limbus and the plica semi-lunaris and so far I have no pterygium but I have seen many hundreds of cases of pinguecula spread to the limbus and become pterygia.

Here then are two conditions of the same histological and biomicroscopical appearance, derived from a common cause and differing in site only as to whether they are or are not in juxtaposition to the corneal limbus. Those that are not or do not become contacts with the limbus remain pinguecula. Those that do, progress to the formation of pterygium. If this assumption is correct, it is of some academic interest but it is of far greater surgical interest. For if the essential portion of a pterygium is sub-epithelial, then surgical treatment must aim at the removal of the active connective tissue core and not be content with mere transplantations, however ingeniously devised. A recurrent pterygium is a major ophthalmic problem, often necessitating the use of skin or mucous membrane grafts. It is, therefore, important to succeed at the first attempt on every pterygium operated upon.

Dr. Kamel, in his procedure of applying carbolic acid to the under surface of the pterygium, is attacking the core of contracting fibrous tissue, but it would seem to me more logical and more surgically complete to dissect it all away. At all events, using my present method of combined corneal shaving, stripping of

the subconjunctival core and exposure of a bare peri-limbal zone, I have had no post-operative recurrence for the past seven years.

The steps in the operation, together with the reason for each, are now described.

1. A horizontal incision is made with scissors in the bulbar conjunctiva above the upper border and below the lower border of the pterygium, from the limbus nasally for five millimetres. This incision is to ensure the creation of a peri-limbal strip bare of conjunctiva. The leaving of a strip of bare sclera, though it may seem an unsurgical procedure, is one followed independently by other workers (Colvin, Candlish, Accola), and is designed to give the cornea time to heal before conjunctiva grows across to the limbus. If conjunctiva is drawn right up to the limbus at the conclusion of a pterygium operation, there is a danger that the free edge may adhere to the raw corneal surface left by the removal of the apex of the pterygium, with consequent early recurrence.

2. The closed scissors are pushed downwards through the upper incision and beneath the pterygium tissue, in preparation for the next step.

3. One limb of a small dressing forceps is inserted either through the upper or the lower incision, so that the pterygium tissue may be firmly held between the forceps limbs inside and outside the tissue. This firm grip near the limbus prevents tearing of the conjunctiva.

4. With a sharp cataract knife or keratome, the apex of the pterygium is shaved from the cornea, a thin layer of cornea being included in the shaving, for the corneal part of a pterygium is essentially a degeneration of the cornea; also it ensures complete removal of all the conjunctival tissue with its blood vessels.

5. The apex of the pterygium, now free, is grasped at its tip by fixation forceps and held up vertical and taut by an assistant. The surgeon, using fine dressing forceps or iris forceps and sharp pointed scissors, dissects the whole sub-conjunctival portion of the pterygium from the under surface of the epithelial layer, as far medially as the plica semilunaris. This comes away in one triangular piece and is a remarkably thick and extensive structure, underlying the whole extent of the pterygium. Indeed, in my view, it *is* the pterygium, and its removal is essential. In addition, its absence makes the remaining conjunctival layer a thin one and avoids the lumpy and unsightly appearance left by the orthodox transplantation operation. I agree with Dr. Kamel that transplantation is illogical and quite unnecessary.

6. At the completion of these procedures, the free edge of the conjunctiva is trimmed so as to excise a sliver of it, and thus

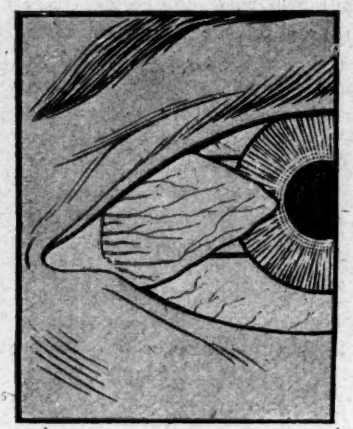


FIG. 1.

Showing initial horizontal incisions in the conjunctiva, above and below the pterygium.

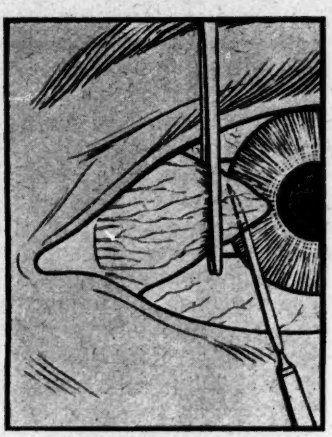


FIG. 2.

Showing the neck of the pterygium firmly held between the forceps blades, while the apex is being shaved from the cornea.

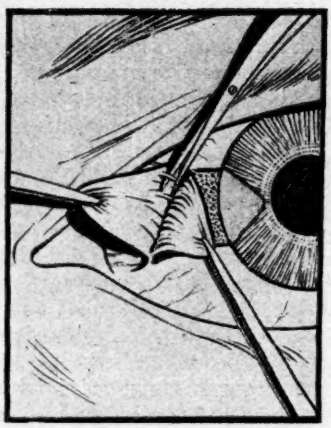


FIG. 3.

Showing the sub-conjunctival tissue being dissected away, prior to its excision.

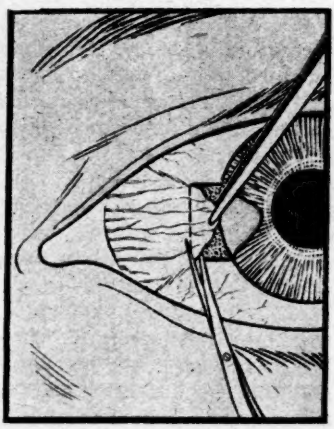


FIG. 4.

Showing the apex being trimmed off by scissors in the direction indicated by the dotted line

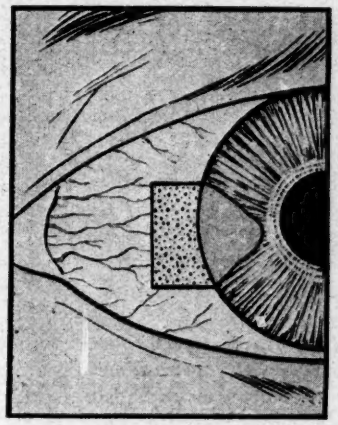


FIG. 5.

Showing the quadrilateral of bare sclera, left at the termination of the operation.

leave a bare strip of sclera several millimetres in width. The conjunctiva rapidly grows over the scleral strip but not before the corneal surface has healed.

7. Before bandaging the eye, as well as antiseptic drops, atropine 1 per cent. should be inserted to help the cornea to heal.

This technique may be successfully used in recurrent pterygium but in cases of second recurrence the free graft method as described by A. L. North should be used. In this procedure a strip of skin is slid under the conjunctiva above and below, separating the free conjunctival edge from the cornea until the latter has healed, an application of the same principle as the bare scleral strip in the operation I have described. The reason for using the graft in second recurrence cases, instead of using the technique described in this paper, is this; in such cases the sub-conjunctival adhesions are of such density and toughness that tissue planes are lost and there is danger of actually perforating the sclera if dissection or even separation of the pterygium tissues from the sclera is attempted. This disaster once happened to me and taught me a salutary lesson.

In conclusion, argument has been presented for the view that pinguecula and pterygium are fundamentally identical aetiologically and structurally, that the primary focus of activity is in the connective tissue and that efficient pterygium surgery must include removal of this tissue, the technique for which has been described.

Acknowledgment.—Abbott Studios, Sydney, for their careful illustrations.

THE ORIGIN OF THE MALIGNANT MELANOMATA*

BY

EUGENE WOLFF

LONDON

IT is presumption on my part to cross the Border into the land of Dawson and his great work on the melanomata and read a paper on that very subject.

I would, however, like to say at the outset that I owe all my basic knowledge of our problem to him; and it must be remembered that Dawson himself hoped his work would be made the stepping stone for further investigation. It seemed to me also that it was perhaps opportune to try and sum up the valuable, and I would say indispensable, evidence which ophthalmic pathology furnishes.

Ribbert a long while ago showed that malignant melanomata could arise from branched chromatophores, and it has now been confirmed many times that a teased preparation of what on microscopic section appears to be a spindle-celled tumour of the choroid is in fact composed of chromatophores in all stages of development. The most important fact brought about by Ribbert's work was that in secondary nodules found in the brain and liver the cells were identical with choroidal chromatophores. Having proved this point the unfortunate thing is that he then attempted to show that all melanomata had this origin.

Similarly Unna and Dawson found that these tumours could arise from downgrowths of the surface epithelium. This, too, has been confirmed time and time again. But they then attempted to prove that all malignant melanomata arose in this way.

Lastly Masson has brought forward evidence to show that the much disputed naevus cells are really developed from the end apparatus of the sensory nerves. As a result of this it is now very widely held that all pigmented growths have a neurogenic origin. It is one of the main purposes of this paper to attempt to show, what indeed has been done before, that a unitary theory both of the origin of melanin and of malignant pigmented growths is not tenable.

It is essential for our purpose to decide on a proper definition of what is meant by a naevus cell; for some say they are large and others small; some describe them as clear, others dark. I agree with the following which is that of Dawson :—Naevus cells

* Being the William Mackenzie Memorial Lecture read at Glasgow on October 24, 1947. Received for publication, December 8, 1947.

(Figs. 1, 2, 3, 4, 5) are small, almost atrophic cells, polymorphic in outline with little cytoplasm. They are separated by a varying amount of connective tissue from each other and are usually arranged in what are termed cell columns or groups or nests which are separated from each other by fibrous tissue septa and the whole usually from the epidermis by a narrow zone of almost homogeneous connective tissue. It was the arrangement of the

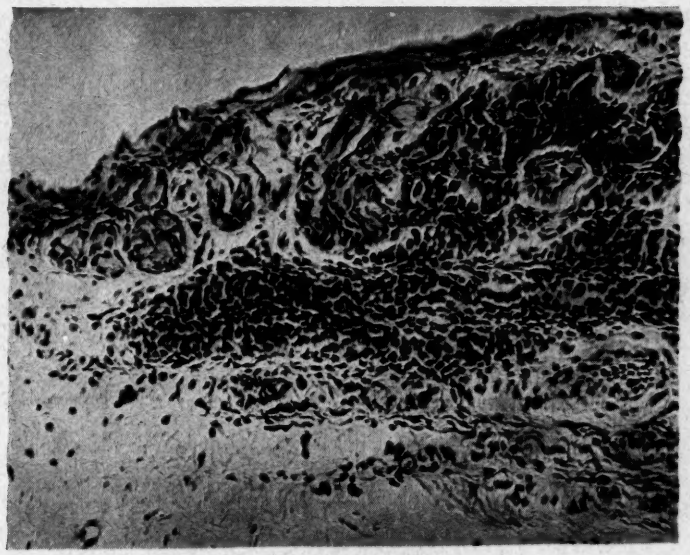


FIG. 1.

Conjunctival naevus at limbus. Note dark staining nuclei of naevus cells and downgrowths of epithelium. An island of epithelial cells among naevus cells.

cells in columns and groups that first led von Recklinghausen to trace their origin to the lymph-channel endothelium. The naevus cells as they grow older tend to resemble lymphocytes and may become drawn out into filaments.

The main reason for deciding at the outset what we mean by a naevus cell is that we may distinguish them from epithelial cells derived from the downgrowths of surface epithelium. I believe this to be of vital importance and yet, very curiously, it is only very rarely discussed even in the most important works on the subject.

As a rule it is quite easy to distinguish naevus from epithelial

cells. So long as the epithelial cells are part of the club-shaped downgrowths there is, of course, no difficulty in differentiating them from the naevus cells. This also applies to islands of epithelial cells found as a result of the epithelial columns being cut across. Also the central portions of the epithelial downgrowths may degenerate and then a cystic condition is produced (naevus glandulosus cysticus). Although often described I have

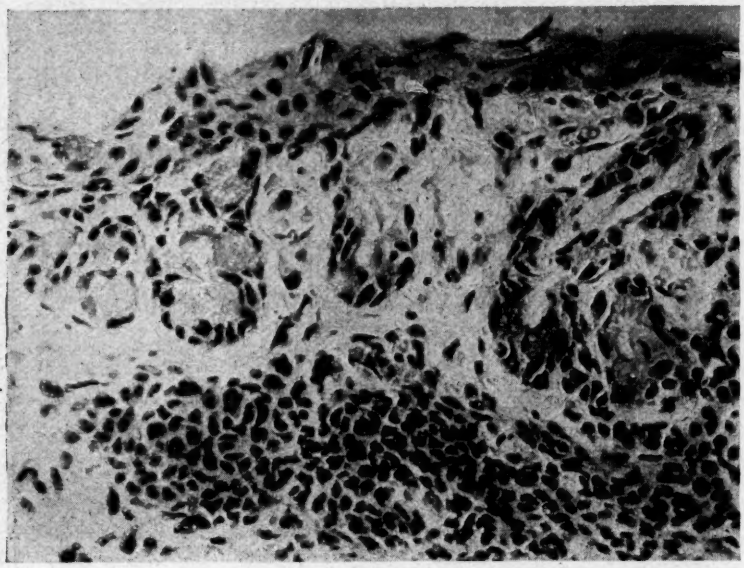


FIG. 2.

FIG. 1 under higher power. Arrow points to process of a chromatophore.

never seen such a cystic tumour formed as a result of degeneration of the naevus cells. When the epithelial cells no longer form part of the downgrowths or of the islands they are differentiated by the characteristics of the cells themselves. The typical epithelial cell has a large vesicular nucleus staining much paler than that of the naevus cell. Also it has an abundant cytoplasm. In certain cases the proliferating epithelial cells are fairly closely packed and then one has to rely on the staining properties of the nucleus only to differentiate them. But where there are masses of the two types of cells next each other the difference between the paler epithelial nuclei and the darker nuclei of the naevus

cells is very striking (Fig. 4). It will be noted as in Fig. 4 that epithelial and naevus cells may proliferate side by side in the same tumour. This fact, provided one is not wedded to a unitary theory for the origin of these growths, is obviously of great importance. A very important point which applies only to conjunctival naevi is that the downgrowths of epithelium may contain mucous cells (Fig. 7). Indeed, P. Veil in his thése de

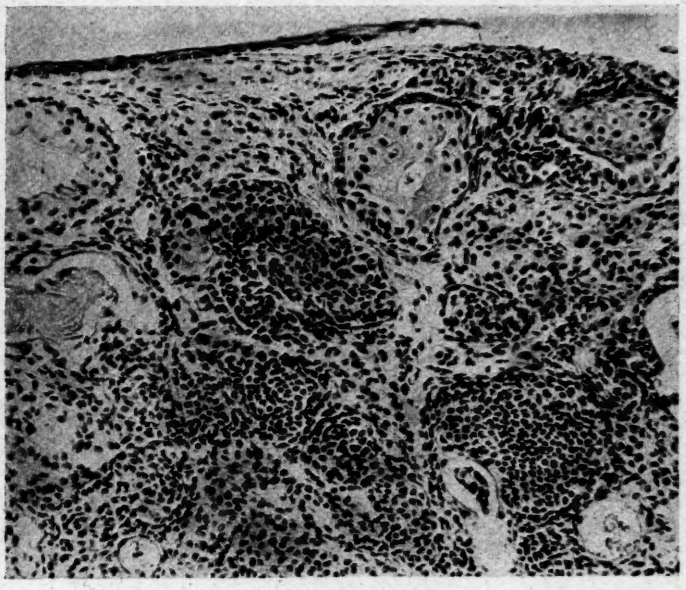


FIG. 3.

Conjunctival naevus. Note islands of epithelial cells and nests of naevus cells.

Paris goes so far as to say that because there are mucous cells among the naevus cells therefore these latter are epithelial in origin! But at any rate the mucus stamps the cells as epithelial.

As stated above, it is usually easy to distinguish naevus from epithelial cells; but at times, owing possibly to the method of fixation and staining, it may be very difficult or impossible.

The epithelial theory of origin of the naevus cells is usually said to have received important support from the work of Bruno Bloch, who treated sections of normal skin with dopa and found that the basal layers of the epithelium were coloured grey or

black; the branched intra-epidermal cells of Langerhans being particularly dark. Also in the masses of naevus cells the superficial ones gave the dopa reaction. This colouration was held by Bloch to be due to the formation of dopa-melanin resulting from the presence of dopa-oxydase in the cells. All cells giving this reaction were held to be capable of producing melanin and were therefore melanoblasts. But while in general Bloch finds

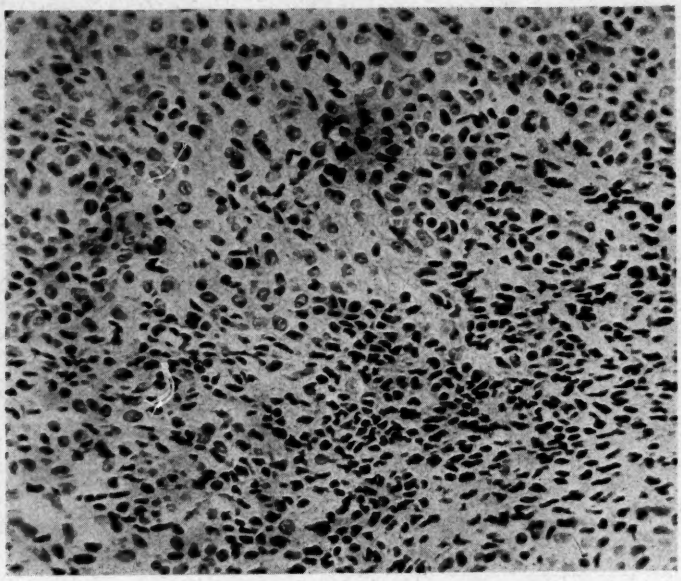


FIG. 4.

Deeper portion of same tumour as FIG. 3. *Note:* proliferation of naevus cells (dark nuclei) and epithelial cells (pale nuclei) side by side in same tumour.

no cells of the normal dermis to be dopa-positive the cells of the Mongol spot are. Now the Mongol spot in the sacral region consists of branched chromatophores like those of the choroid and generally recognised as mesodermal in origin. In making this exception, therefore, Bloch in fact helps to prove the dual origin of the pigment.

It is often stated that the problem of the origin of the malignant melanomata is synonymous with the problem of the origin of the naevus cell. This I believe is a fundamental error and has led to a great many unjustified conclusions. In the first place it

cannot be too strongly emphasised—a point that is often forgotten—that although there are naevi in the uveal tract there are no naevus cells. In fact, Morax would regard the naevi of the skin and conjunctiva as quite different tumours from those of the uvea. Also we find that Bloch, like so many others, having decided that the naevus cells are epithelial in origin makes no distinction between them and the epithelial downgrowths. You

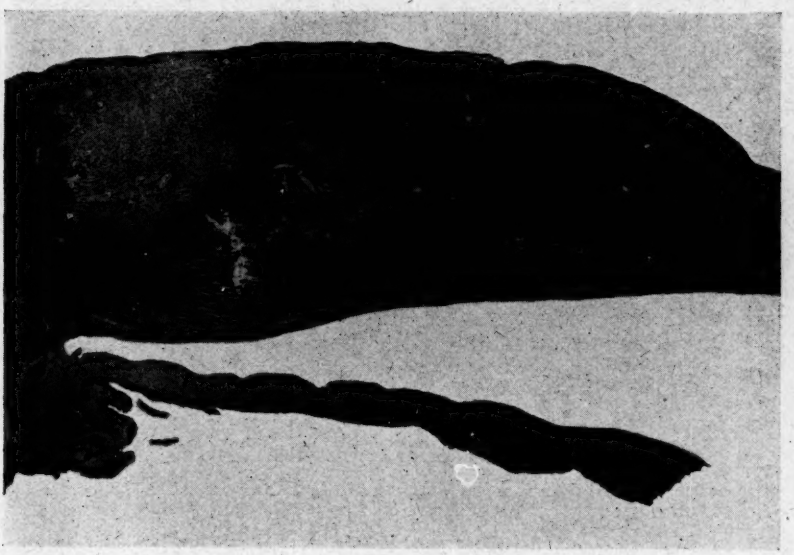


FIG. 5.

Melano-carcinoma of limbus. Note growth adherent to anterior surface of cornea. × 25.

will see by the figure taken from Bloch's article in the Jodassohn Handbuch that he describes an obvious downgrowth of epithelium as consisting of naevus cells.

Further, Dawson's well-known figure of the formation of a malignant epithelial pigmented growth shows this arising from downgrowths of epithelium and not from naevus cells.

I would next like to draw attention to a paper by D. T. Smith in the Bulletin of the Johns Hopkins Hospital for 1925, which I think has received nothing like the attention it deserves. After pointing out that if pigment is formed in a cell the granules are the same size, he says: "When granules of pigment were taken in by cells not normally pigmented, the picture was distinctly

different from that described above. In this case the pigment was a foreign body in the cytoplasm, and the cell reacted in such a manner as to clump it into masses of irregular size and shape. Cultures of various types of embryonic chick cells were grown and pigment granules then added to the culture fluid. The whole process of ingestion and clumping of the granules into masses in the cytoplasm, with the formation of a vacuole about each

FIG. 6.

Detail of Fig. 5 under higher power. Note formation of theca containing *epithelial* cells and the place where the epithelial cells have grown down through basement membrane (Zenker Mallory's triple stain).

mass, could be followed with the microscope (Smith, 1921). The reaction was always the same, regardless of the source of the pigment. Melanin granules from the eye (chick, pig, dog or human), carbon particles, carmine granules, indian ink and blood pigment, all became clumped in the cytoplasm into masses of irregular size and shape. When once the pigment had been taken into the cytoplasm it was not given up until death of the cell.

" It is evident from these observations that here is a practical method of determining from the appearance of the granules, when examined with the oil immersion lens, whether they have been produced by the cell or have been taken in as foreign bodies. In studying the pigment cells we need no longer be confused by the question whether a particular cell under observation is a pigment producing or a pigment carrying cell."

Dawson and others, in order to bring the origin of the choroidal melanomata into line with the epithelial theory, have suggested

FIG. 7.*

Section of naevus of conjunctiva to show mucous cells (stained green), both in surface epithelium and in epithelial downgrowth (Masson's stain).

that the choroidal pigment was derived from the retinal pigment epithelium. As has now often been pointed out there is a great deal of evidence which makes this impossible, or at any rate extremely unlikely.

In the first place the retinal pigment is morphologically different from the choroidal. The retinal pigment most characteristically occurs as spindles or rods; it is true that in the bases of the cells rounded forms are found, but these are much larger than the fine particles in the choroidal chromatophores. Also the retina is fully pigmented by the fifth month of intra-uterine life, whereas no pigment occurs in the choroid till a few months before birth, and then first in the outer layers. Treacher Collins showed, too, that the pigment epithelium of the retina though amoeboid

* Unfortunately reproduction in monochrome does not show the difference.

throughout life does not pass through the membrane of Bruch. He also brought forward evidence to show that the uvea produces its own pigment: tags of pupillary membrane which have been completely isolated before the ingrowth of the secondary optic vesicle may become normally pigmented; and in rudimentary eyes in which no epiblastic tissue was present the uvea was found normally pigmented. Then, too, it has been repeatedly shown that in tissue culture the retinal pigment cells grow out in sheets like epithelium while the choroidal chromatophores grow like fibroblasts, *i.e.*, as isolated cells. Lastly, the choroidal pigment particles are all the same size. According to Smith, therefore, the pigment has formed in these cells which are therefore melanoblasts.

As further evidence against a unitary theory of the origin of malignant melanomata I would remind you of the well-known difference in the method of growth between the sarcoma and carcinoma or epithelioma of the limbus. The epithelial tumours tend to grow over the cornea like a pannus being closely adherent to it; while the sarcoma usually forms a mushroom-shaped pedunculated growth which tends to cover but not to get adherent to the surface of the cornea.

We now come to a consideration of Masson's neurogenic theory. This is a beautiful, detailed and suggestive work which has received almost universal acceptance. The following points also seem to favour it: The association of neurofibromatosis with café-au-lait spots and pigmented growths; the interesting demonstration by Laidlaw and Murray that naevi probably represent the touch corpuscles of reptiles and amphibia; the suggestion latterly put forward that the pigment cells are derived from the neural crest and grow down with the nerves to the skin, etc., and finally, possibly the curious insensitivity of pigmented growths to X-rays. But there are a number of important facts which call for criticism. In the first place, and this is a fundamental point, the theory has no room or explanation for the downgrowths of epithelial cells, both in the naevus and in the malignant melanoma. Thus in agreeing with Masson's theory Boyd in his excellent Pathology says: "In many cases there is an apparent proliferation of the basal layer of epidermal cells with the formation of downgrowths of cells which penetrate into the dermal portion of the naevus and thus gives the impression that the tumour has arisen from the epidermis. It seems more probable that these basal epithelial cells are merely pushed aside and displaced downwards by the proliferating naevus cells and melanoblasts originating in the epidermal portion of the sensory organs."

Now there is in my preparations no evidence that the epithelial cells are pushed down. They grow and proliferate as typical epithelial cells.

In the second place Masson says that the cells of the Merkel-Ranvier corpuscles are represented in the human by the clear cells (cellules claires) and what he calls the branched pigmented Langerhans cells and that these are therefore really modified cells of Schwann. Now the clear cells occur at regular intervals at the junction of the dermis and epidermis. They have a rounded or kidney-shaped nucleus which stains denser and is larger than that of the neighbouring epithelial cells. Around this is a well-defined clear space. From the base of the cell Masson describes a process which, continuous with a nerve fibre, runs down into the dermis. Masson holds that the clear cells are derived from Schwann cells, which migrate and insinuate themselves between the epithelial cells of the basal layer during foetal life.

Now up to the present there has been no embryological proof of this. Also it has been shown that after the destruction of certain sense organs, for instance the Gandry corpuscles of the duck, the cells of these are regenerated locally and not from the nerve fibres; and further the cells of the Merkel-Ranvier bodies appear to be developed from the surface epithelium and not from the cells of Schwann. (Szymonovicz).

Also Masson describes the Langerhans cell as a branched pigmented cell lying in the basal layers of the epidermis and sending processes into the dermis. It must be clearly understood, however, that the cell Langerhans described has only been demonstrated with gold choride and lies 3-5 cells up from the basement membrane. It has never been shown to have a nucleus and Langerhans insisted that it had nothing to do with pigment function.

Masson believes that what he calls the Langerhans cell* is the sole producer of pigment and that it acts like a gland pouring its pigment into the neighbouring cells. But Smith has shown that the pigment granules in the basal cells are small and rod-shaped, while in the Langerhans cells the pigment is rounded; moreover they are all of the same size and therefore formed primarily in the epithelial cell.

A great difficulty also arises from the fact that Masson does not say whether these tumours are mesodermal or ectodermal. This naturally follows from the fact that there is still dispute as to the origin of the cells of Schwann. Many of those who uphold the neurogenic theory, however, use such terms as neuro-epithelial and neuro-sarcoma.

* I find however, that this is now the accepted meaning of the Langerhans cell and must presumably remain so.

Further, the neurogenic theory is another attempt at bringing all pigmented tumours under one roof, and as such it cannot be accepted.

Next I would refer to those rare but definitely established growths which arise from the pigment epithelium of the retina, ciliary body and iris.

Only one, that of Griffith, has been described as arising from the pigment epithelium of the retina; a fair number have been found coming from ciliary epithelium, the best known being that of Treacher Collins, which was later included in the work of Fuchs.

A number of growths also have been described arising from pigmented epithelium of the iris. I show you the picture of Morax's case. The actual growth is dense black; a bleached section shows that the growth is composed of cells exactly like those of the pigment epithelium of the iris. Here then we have pigmented growths arising from epithelium. There can be no question of their coming from sensory nerve endings.

We see then that melanomata may arise from naevus cells, epithelial cells and from branched chromatophores and, as in Fig. 4, naevus and epithelial cells may proliferate side by side in the same tumour.

I would suggest, therefore, that the naevus should be regarded as a composite or mixed tumour consisting, for our purpose, of naevus cells, epithelial cells, and branched chromatophores. Each of these may proliferate alone or with the others and produce a malignant pigmented tumour. The final structure will depend on the relative proportions of the three types of cell.

REFERENCES

BLOCH, BRUNO (1925).—Les Naevo-Cancers, Paris Medical. Feb.

——— (1927).—Das Pigment in *Handbuch d. Haut. u. Geschlechtskrankheiten*, Berlin, pp. 434-541.

COLLINS, TREACHER (1926).—*Trans. Ophthal. Soc. U.K.*, Vol. XLVI, p. 86.

DAWSON (1925).—*Edin. Med. Jl.*, Vol. XXXII, p. 501.

RIBBERT, H. (1911).—*Lehrbuch alg. Pathologie*, Vol. IV, p. 262.

UNNA, P. G. (1893).—*Berl. Kl. Wochenschr.*, Vol. XXX, p. 14.

MASSON (1926).—*Ann. d'Anat. Path.*, Vol. III, pp. 417-453; 657-696.

VEIL, P. (1925).—*Thése de Paris.*

SMITH, D. T. (1925).—*Bull. Johns Hopkins Hosp.*, Vol. XXXVI, pp. 185-197.

LANGERHANS (1868).—*Virch. Arch. f. Path. Anat.*, Vol. XLIV, pp. 325-337.

GRIFFITH, J. (1893).—*Trans. Ophthal. Soc. U.K.*, Vol. XIV, p. 160.

MORAX (1926).—*Cancer de L'appareil Visuel*, p. 360. Paris.

LAIDLAW, G. F. and MURRAY, M. R. (1933).—*Amer. Jl. Path.*, Vol. IX, pp. 827-838.

THEOBALD, G. D. (1937).—*Arch. of Ophthal.*, Vol. XVIII, pp. 971-997.

SZYMONOVICZ (1895).—*Archiv. f. Mikr. Anat.*, Vol. XLV, p. 624.

"AN OCULIST IN SWITZERLAND"

BY

JOHN FOSTER

LEEDS

THE account which follows is a précis of lectures given on this subject at the Royal Society of Medicine and the Tennent Institute. It describes the Swiss portion of an ophthalmic tour in August and September, 1946. The kindness of the heads of the various clinics during the visit, and in responding to numerous enquiries subsequently, is a matter for which I would like to express my gratitude.

The writer doubts if it is possible to see so much of ophthalmic interest in so small an area in any other part of the world. Switzerland is not only a creative amalgam of three European civilisations, but is also endowed with a most excellent transport system, has had 122 years of continuous peace, and has a first-class precision engineering and pharmaceutical industry in addition.

Basel

Professor Brückner, the head of the University clinic, is the Doyen of Swiss Ophthalmology, and retires on reaching the age limit in 1947. Born the son of a Russian Professor of Geography in Zoppot, he received part of his training in Berlin, partly as assistant to Hering at Leipzig, and later held the Chair at Jena. He came from this last city to the Chair at Basel, with an interest in physiological optics, and a wonderful collection of apparatus. He delighted his new assistants on arrival, by doing the first Krönlein operation ever seen in Basel (with a chisel), and still takes a poor view of what he calls " anterior chamber surgeons." Apart from a standard textbook, his chief publications have been on physiological optics (especially on dioptrics and colour vision), though there are many on clinical subjects.

His clinic of 74 beds is sixty years old; an excellent building by our standards, but considered out of date in Switzerland. His friend, the late Professor Bielschowsky, he says, described it as " like a sanatorium "—I suppose because there are many small high-ceilinged rooms.

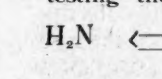
The plans of the new clinic (of approximately the same beddage), will be available after the Basel Parliament has seen them in 1947.

On going through the clinic the orderliness is most striking—a room for foreign reprints, a library, a room for the Professor's

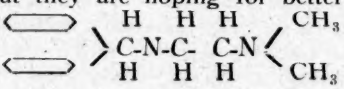
reprints, four chemical laboratories, and two for physiological optics.

I spent an hour with Fräulein Giger, who runs the orthoptic department. She is a social worker who does this voluntarily in her spare time, including the necessary reading. She has a good grasp of the problem of " false projection," which is minimised by some continental schools in spite of Bielschowsky's teaching. The professor, she says, is encouraging, but some of the younger men are not so interested. Although she has a Hamblin amblyoscope, more English apparatus would help. Most of her time is spent in treating amblyopia. The children put rings round dots of light on a board, and are admitted as in-patients for occlusion.

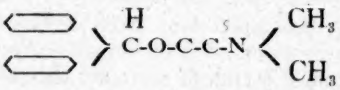
I also spent a similar period with the head biochemist. A good deal of research has been carried out here on the intra-ocular distribution of cholinesterase, so that they are particularly interested in the fluorophosphonates (which produce miosis by destroying it), though they have not actually experimented with them. As they agree with Ridley (*Trans. Ophthal. Soc. U.K.*, Vol LVIII, ii, p. 590, 1938) that the source of the increased ocular histamine in glaucoma is the tears, they have been testing the conjunctival and corneal tolerance to " antispin "



an anti-histaminoid. This substance causes corneal oedema, but they are hoping for better results with neo-antergan.



which closely resembles

benadryl 

introduced here from America for treatment of allergic conditions by mouth. They are also tracing the distribution of phosphorylated carbohydrates in different parts of the eye.

On a ward round the professor is followed by a sister with a tray of drop bottles and clean pads. He changes the pad and puts in a drop himself after examination. Squints tenotomised with a guard suture and intra- and extracapsular extractions side by side, were the only cases of note. As usual the intracapsulars were much " whiter " than the others.

I tried to obtain some idea of the organisation, standards, and methods of payment, in the University Clinics, in the incorrect

belief that there was a State Service. As Switzerland is cantonized, and each has a different system, the Professor told me it was impossible to generalise.

Schaffhausen

I journeyed to Schaffhausen from Zurich by train (third class), and found the wooden seats quite tolerable for an hour or so. It is pleasing to find that while notices request abstention from spitting in French, German and Italian, it has not been found necessary to include one in English. Swiss railways are superbly run, and the conductors most helpful.

Grieshaber cataract knives are so well known, that I was surprised to find their factory to be a small cutler's shop.

The firm produced their first eye instruments in 1915, when the French supply failed. Even their initial efforts were a good deal superior to the French, and a challenge to the English, while certain instruments cf. corneal trephines are superior to our own products. So good is the fit of the obturator of a Franceschetti trephine that when it is pushed home the instrument looks like a solid rod to the naked eye.

Grieshaber's supply stainless steel knives ("Rostfrei" or "Innoxydable") in preference to those of silver steel to most Swiss clinics, as they claim there is little difference in the quality of edge, and this material if sterilised by hot air eliminates the problem of rust.

Against this, I found three out of five Universities sterilise their knives chemically, and I suspect some other factor, for example the smoke (acid) free Swiss air may also play a part.

London surgeons sometimes claim that the close limits to which Grieshaber instruments are specified indicate automatic rather than manual reproduction. The firm is unwilling to say whether this is so or not, as it is a trade secret.

On the other hand, the introduction to their 1946 catalogue states that instruments are "exécutés à la main," and the appearance of the ground zone of the Grieshaber knives made in U.S.A. by a cousin of the family differs from that of the Swiss product.

Their most interesting instruments are those for keratoplasty, and I would advise those wishing to examine them to write in advance as:—

(*a*) certain scissors forged in Germany, and finished in Schaffhausen, are no longer available.

(*b*) the firm do not always "carry" their full range cf. Giradet's instruments, and only make some of them to order.

(*c*) some of the instruments have several uses, and discussion about them in a foreign language can be most confusing. For

example, Franceschetti's " niblick " (Fig. 18*b*) can be used for both keratoplasty and dacryocystorhinostomy, and Elschnig's round-ended knife (Fig. 18*a*) for removing the remains of Descemet's membrane was originally designed to extend cataract sections, and is still so employed.

Zurich

An excellent account of Professor Amsler's clinic has been given in the *Brit. Jl. of Ophthal.*, Vol. XXXI, p. 223, 1947. This is the largest clinic in Switzerland, and as will be observed from Roper Hall's account, some most interesting research work has been and is still being carried out there.

Berne

The clinic is a big one (70 beds), though Professor Goldmann's private work goes to a large nursing home, the other side of the river.

Professor Goldmann, who comes from Komotau in the Czech Sudetenland, was trained as a physiologist, and as in the case of Professor Brückner this perceptibly influences the trend of his papers.

Take, for example, " The Aqueous Veins," which he discovered shortly after, and quite independently of Ascher. He considers that pathologists failed to find these, as they are just like ordinary veins post-mortem.

Estimation of the total refraction (Gesamtbrechtkraft) of the eye and its comparison radiologically with its axial length, or the Stiles-Crawford effect—the apparent variation in intensity to an observer of a narrow beam of light according to the point at which it traverses the pupil. His experiments indicate that the latter is due to special properties of the retina rather than absorption by the transparent media.

For me the main interest of his work lay in his ingenuity in diagnostic instrument design, and the conclusions this has enabled him to draw on clinical subjects. He was kind enough to demonstrate the use of some of these devices, all of which are obtainable from Haag-Streit, Werkstätten für Präzisionsmechanik, Liebefeld-Bern.

Localisation of intra-ocular foreign bodies and retinal tears.—The mechanical basis of these three methods is a small metal ring whose under surface bears four obliquely directed hooks (Fig. 1). When this type of ring is applied by a twist of an applicator to a scleral or corneal surface, it adheres firmly without causing permanent damage, and can be removed when required by a twist the other way.

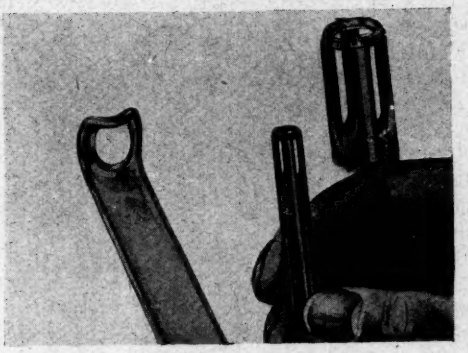


FIG. 1.

Goldmann's localising ring with applicator and plastic lid retractor.

Initial localisation.—The ring for initial localisation of intra-ocular foreign bodies, is about 9 mm. in diameter. Prior to application to the cornea its hooks are dipped in Indian ink.

The marks so produced serve as " points de repère " when the ring has been removed after the X-ray.

During radiography the lids must be held back by transparent and radiotranslucent plastic retractors, or they sweep the ring off.

Non-magnetic foreign bodies.—The majority of such bodies are embedded in, or close to the scleral wall, and a modification of the above technique has proved so satisfactory that 24 out of the last 25 such bodies have been successfully withdrawn by insertion of forceps through a scleral incision at the site so indicated.

The conjunctiva is reflected over the site indicated by initial localisation, and a 3 mm. hooked ring of the same type " screwed " on to the sclera at this point.

X-ray snapshots are taken with the patient on the operating table, the central X-ray beam being perpendicular to the plane of the ring.

The pictures are recorded on dental film cut down to an oblong of 1·5 x 4 mm., the open edge being sealed with strapping, and the tiny cassette so produced inserted in the finger of a rubber glove. The latter being sterilised can be held close against the sclera in the plane of the ring.

The ring is moved as the films indicate, until it overlies the foreign body.

Very rapid development is necessary in view of the multiple exposures, and is achieved by use of the following solutions :—

A 500 c.c. water
50 gr. pyrocatechol
50 gr. sodium sulphite (Na_2SO_3Sicc)
B 500 c.c. water
30 gr. sodium hydroxide
50 gr. potass. bromide

Equal volumes of A and B are mixed a short time before use, as the mixture is unstable.

Development is complete in 20-35 seconds at 18° C. The film can be examined after partial fixation, which takes another two minutes in a rapid fixative. Such films fade, and cannot be preserved for record. This is not important, however, as two exposures are usually enough to position the ring.

So far as I am aware, the method has not been used in this country, though a less rapid method of development taking seven minutes and using hydroquinone instead of pyrocatechol has been employed by our orthopaedic surgeons, to localise the guides for Smith-Petersen pins in the femoral neck.

The Lochfinder.—The " Hole-finder " is a tiny " P bulb " whose metal case bears a similar ring of hooks. This is moved about the sclera under (unlighted) ophthalmoscopic direction, until its glow coincides with a retinal tear.

Objective determination of visual acuity.—The visual acuity of children, illiterates, and malingerers, can be determined by measuring the maximum distance at which a moving test object provokes optico-kinetic nystagmus in the fixing eye.

A brightly illuminated white-painted strip is suspended from a spring, and oscillated in the vertical plane by a solenoid (Fig. 2). The strip is covered by fine black checks of a specific size, like a chessboard, and bears at its centre a strip of similar but larger check.

As the strip is seen through a slot which precludes a view of its edges, the normal eye has at 3 metres the impression of an immobile gray strip.

As soon as the patient is near enough to resolve the band of bolder check at the centre of the strip, his eye can be seen to follow it up and down.

Rieken based a night vision test on the same principle for the Wehrmacht, the patient being seated in the dark at a fixed distance from a revolving black drum painted with white strips.

The illumination of the drum was increased under photometric control until the conjunctival vessels near the outer fornix could be seen moving to and fro horizontally under a blue filtered ophthalmoscope light.

As misdirection of the light on to the pupil was liable to invalidate the test, Goldmann designed a contact lens with a clear centre

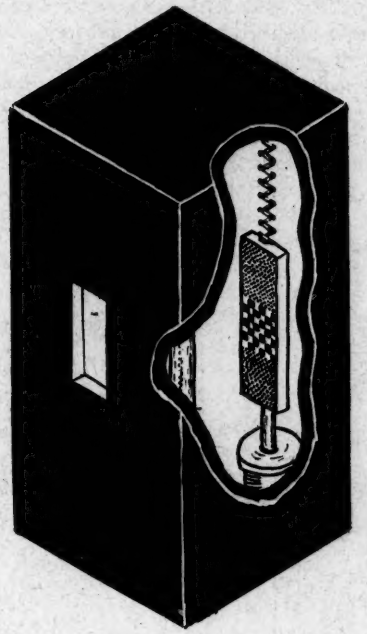


FIG. 2.

Objective determination of visual acuity (Goldmann). This is very diagrammatic, the length of chequered strip and the spring necessitating an instrument several feet high.

and eight spots of luminous paint on the blackened rim. These spots can be seen moving in the dark as soon as optico-kinetic nystagmus occurs in the wearer's eye (Fig. 3).

FIG. 3.

Night vision test.

The auto-recording spherical perimeter.—As H. M. Traquair, the leading British authority on this subject, has never ceased to point out, clinical perimetry is the most subjective form of examination in our speciality, the results are overlaid by the personal equation of examiner and examined, and it is the perimetrist not the perimeter that does the perimetry.

Goldmann, while admitting the force of this argument, holds that ultimately perimetry may become a science rather than an

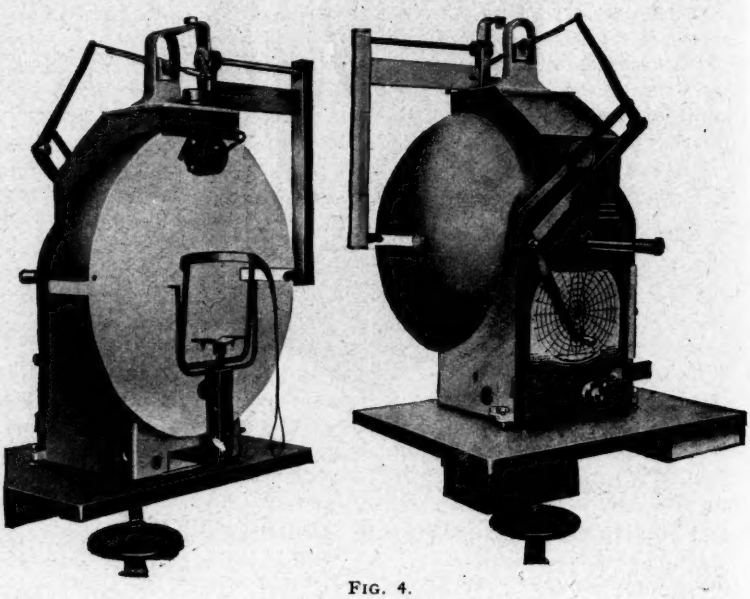


FIG. 4.

Goldmann's perimeter.

art, and that meanwhile it is possible to achieve a more standardised relative perimetry than is possible with existing instruments.

The perimeter designed to this end (Fig. 4) is the result of ten years of experiment and collaboration between Goldmann and Hans Papritz, the chief designer of Haag-Streit. I am much obliged to the latter firm for the loan of the blocks illustrating the device.

The test object is a spot of light (whose size can be varied by stops and the intensity can be controlled by filters) which is projected against a white hemispherical background whose luminosity is photometrically controlled.

As the area, luminosity, and sharpness of the edge determine the stimulus, the oval shape of the spot (Goldmann claims) is unimportant, but the speed of movement (5° per sec.) contrast, adaptation, and background illumination (about 40 f.c.) are carefully standardised.

Fixation can be continuously controlled by the surgeon through a telescope, while the ingenious pantograph permits him to advance the test object at right angles to the margin of a scotoma, under fingertip control, and while watching the chart.

The telescopic opening is so small that it only prevents scotometric mapping of the field for 1° around fixation.

The isopters have been worked for objects of 0·25, 1, 4, and 16 square millimetres, employing different, specific filters, on thirty men between the 20th and 30th years, and another group between the 60th and 70th years.

It has been found that if the test object is enlarged four times, it will give the same peripheral isopters if its contrast with the background is reduced by 0·31. It has also been found advisable to correct refractive errors in testing the central isopters.

It was perhaps presumptuous on my part even to attempt to criticise so ingenious and beautiful a piece of machinery, but when I examined the pantograph at the clinic the highest joint between a cone and conical hollow looked rather fragile.

I later paid a visit to the Haag-Streit factory, which is like a private house in the country, at Liebefeld-Bern, about four miles away by bus. There the manager showed me I was quite wrong in thinking this joint could easily be put out of order. He took hold of it, and shook it vigorously enough to rock the whole instrument sideways without altering the adjustment in any way.

Two other minor criticisms are also possible. First, there is a small area on the horizontal meridian in each temporal field, in which recording is impossible. This corresponds with the nicks in each side of the hemisphere, and is not of importance.

Secondly, although the reflecting surface remains unaltered in the clear Swiss air, I suspect that the filthy atmosphere of industrial England would immediately alter its reflectivity.

Against this, Professor Goldmann tells me that the surface is washable, and that the isopters depend far more on changes in contrast, which can be standardised by the built-in photometer, than on changes in the overall brightness which is dependent on the age of the bulb and the reflectivity of the background.

All Swiss clinics give the place of honour to this perimeter, and have relegated that of Maggiore to second place.

Professor Goldmann also tells me that he has compared the instrument on the same cases with Pfluger's perimeter and the Bjerrum screen, and has found it superior to both of them.

The physiological value of the instrument is undoubted, and "a priori" one would expect it to be superior for clinical work to the perimeters employed here.

On the other hand, it costs £180, which as the Americans say "is not hay," and before purchase one would like to be assured by comparative tests on a series of cases that it will in practice indicate field changes of clinical importance earlier than, or has other advantages in diagnosis or prognosis over our own perimeters.

I might add that I have submitted all my notes and reprints to Mr. H. M. Traquair, of Edinburgh, who also holds this opinion.

Binocular micro-gonioscopy.—Both these techniques are based on the Haag-Streit (1937) slit-lamp on whose design Goldmann

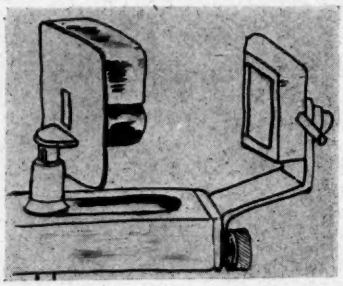


FIG. 5.

Goldmann's deviation prism fitted to Hamblin slit-lamp.

had considerable influence. I doubt if there exists a better lamp for clinical work.

As an excellent translation of Goldmann's description of the lamp and the two contact lenses is given in B.J.P.O. 1938 : 13 : 77, I will confine myself to features of practical importance.

The essential attachment for both techniques is a deviation prism which swings on an arm in front of the illuminating lens, and diverts the beam by internal reflection 13° right or left as required. This reduces the beam-microscope angle to 5°. This prism alone (on the Haag-Streit lamp) permits examination of the posterior vitreous without a contact lens. Fig. 5 shows an attachment to fix the prism to a Hamblin slit-lamp. I have insufficient data to comment on the effectiveness of this combination as yet.

The eye is anaesthetised by a warm 0·4 per cent. diocaine

(C.I.B.A.). This occupies a drop bottle in a thermostatically controlled heater, together with an undine containing normal saline, to fill the bowl of the contact lens. A practical British device of this type a "solution heater for two bottles" is made by Kelvin Lenses Ltd., Imperial Works, Allum Street, Manchester. Goldmann prefers diocaine as it has an almost instantaneous action.

When I tried to obtain it, C.I.B.A. informed me that "they withdrew diocaine many years ago, and advised nupercaine 1/100 as a substitute."

Nupercaine is stated to be as strong as 3 per cent. cocaine, but to act more quickly (30 secs.), and must be kept in alkali free glass. Unfortunately the 1/1000 solution recommended for ophthalmic use is only obtainable in England in ampoules which makes it too expensive for occasional instillation.

C.I.B.A. have kindly put up some nupercaine in drop bottles which I have employed for about nine months. The action resembles that of holocaine in "white eyes" though there is less initial irritation; corneal anaesthesia for tonometry and contact lens work is attained in one to one-and-a-half minutes and there is even less corneal disturbance.

Outside Berne, the Swiss have an expression, "Wie Ein Berner" meaning a "slow worker," so it is interesting to record that insertion and control of the contact lens, arrangement of the head on the chin rest, and focusing the lamp, requires a most un-Bernese degree of activity. The lens concavity is deep, and I find skilful handling is needed to prevent loss of saline.

The Haag-Streit lamp is a great help here, as the controls for

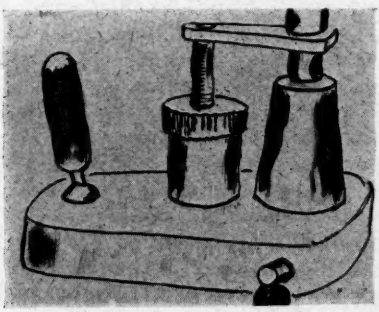


FIG. 6.

Controls of Haag-Streit slit-lamp (diagrammatic). The lever controls antero-posterior and lateral and the milled wheel the vertical movement of both lamp and microscope. (Note ball-bearing support of transverse element).

height, lateral and antero-posterior movements, are all in the compass of one hand (see Fig. 6), leaving the other free to tilt or rotate the contact lens as necessary, though it will often remain *in situ* without pressure.

I found later at the Haag-Streit factory that this lamp control is achieved by feather-light castings, and ball-bearing support of a transverse chassis element.

When you attempt these adjustments with the separated controls of an English lamp, you feel, like the Highlander who sat on an ant heap, that a third hand would be of great help.

As Busacca has indicated, the method has advantages over other methods of gonioscopy, which render it particularly suitable for clinical work. The patient is seated, an instrument in common

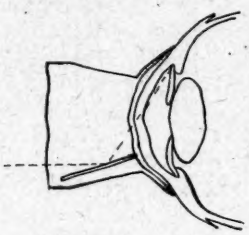


FIG. 7.

Goldmann gonioscopy lens. Dotted line represents path of incident and reflected light.

use provides x20 binocular vision, and a narrow beam to estimate relief. By rotating the contact lens which contains a little mirror (Fig. 7) which both radiates the illumination in and reflects the image outwards, the whole angle is visible without moving the patient.

Incidentally, Busacca claims that the narrow beam shows the line of Schwalbe is not a prominence though to my untutored eye it appeared to be so in the cases I was shown.

The chief use of gonioscopy at Berne is to decide which glaucoma operation is indicated, and in which cases the post-operative result will be reasonably permanent.

For the narrow angles which accompany the shallow anterior chamber of congestive glaucoma, Goldmann advises iridectomy. A poor result is foreshadowed gonioscopically by visible remains of iris root or " nipping " of the lens edge in the incision.

Dieter's iridectomy (Fig. 8) overcomes both these difficulties, though if upward dislocation of the lens still occurs (as in malignant glaucoma) an intracapsular extraction is indicated.

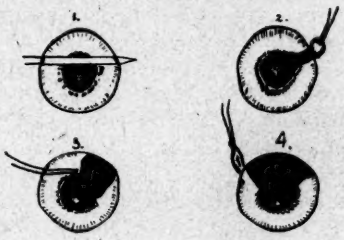


FIG. 8.

Dieter's Iridectomy

While accepting that Dieter's method has special advantages, I have found personally that it is not too easy to perform. Unless the knife is entered rather high on the limbus, the iris is elastic, and the anterior chamber fairly deep, it is difficult to get a good grip and make the second iridectomy truly basal.

For the wide angles found in the deep anterior chambers of glaucoma simplex, cyclodialysis by a slight modification of Blaskovic's method is advised.

A radial incision of 3 mm. long starts 5 mm. from the limbus and the spatula inserted at right angles to the incision before being swept around.

The aim is a separation of $\frac{1}{4}$ of the circumference and a good result is signalised by a permanent slit-like fistula occupying this proportion of the angle of the anterior chamber.

At this point one might conclude that the chamber depth was as good an operative indication as gonioscopy.

There is, however, a difficulty. Since 1938 certain cases of glaucoma simplex with deep anterior chambers have occurred with narrow angles.

Cyclodialysis in these cases was followed by acute glaucoma some days later.

In these cases, the cyclodialysis must be preceded by basal iridectomy *in the same quadrant three weeks earlier.*

It is clear both from our conversation and his " Kammerwinkel Studien beim Primarglaukom " (*Ophthalmologica,* p. 102, 1941), that Goldmann finds that the angle is narrow in acute and chronic congestive glaucoma.

During periods of high tension the angle may be closed over $\frac{3}{4}$ of the circumference and during periods of normal tension, though open, it invariably remains narrow.

On the other hand, his observations differ from those of the American School, as he finds no sure and specific gonioscopic abnormality in most cases of glaucoma simplex.

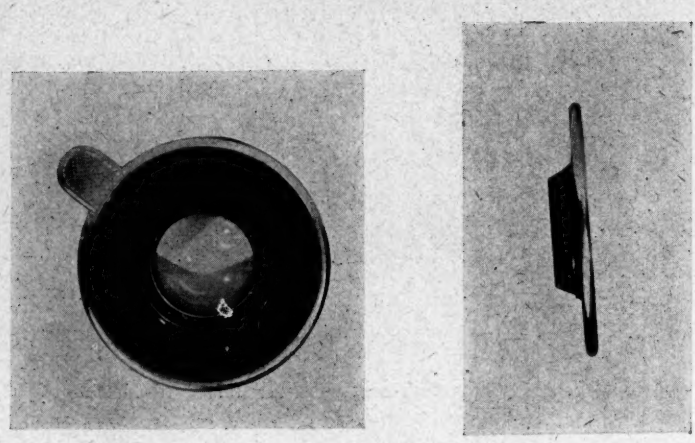


FIG. 9.

(Front view) Hruby's lens for retinal biomicroscopy. (Side view)

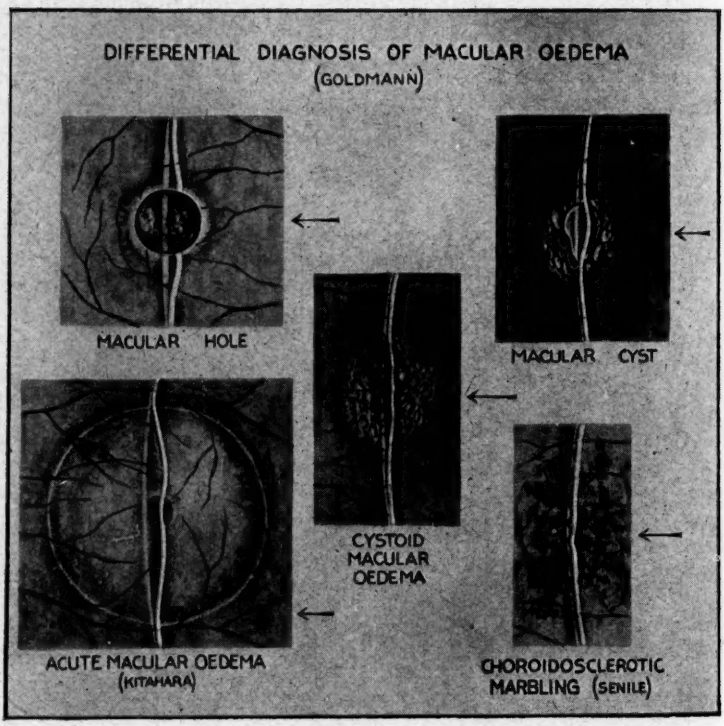


FIG. 10.

Biomicroscopy of the macula. (Drawing by Prof. Goldmann's assistant Iseli).

Retinal biomicroscopy.—The small flat-surfaced plastic contact lens (employed in conjunction with the deviation prism) resembles that of Koeppe, but has two lateral nicks which make it easier to handle. Sallman told me in 1936 that Zeiss were attempting to produce a lighter Koeppe lens with a plane face of 15 mm. diameter instead of the original 10 mm. Goldmann's lens appears to realise this ideal, as it has a plane face of 14 mm., only weighs 0·8 gramme, and remains *in situ* without being held. While not so simple as Hruby's method (Fig. 9) (a variant of that of Lemoine and Valois 1923, *vide* Lausanne) which does not require a contact lens, the optical results are superior when compared on the same case. It is difficult to get the Hruby lens really close to the eye in a trial frame.

Goldmann has developed a diagnostic technique for macular oedema, and the various possible appearances are shown in Fig. 10.

In a series of forty-two such cases, ten were due to senile choroidal sclerosis, and were improved by twelve retrobulbar injections of 0·4 c.c. of 0·1 per cent. atropine sulphate at three-day intervals.

Although the degree of improvement is unspecified, Goldmann regards this as a " useful " measure.

In 21 cases of the same series, the case was hypertensive, thrombotic or cyclitic, and treatment was ineffective. No attempt was made to treat macular " holes " unless a detachment occurred.

To save the visual field in two such cases, after a paralysing injection of novocaine into the muscle funnel, the patient was seated in front of the slit-lamp wearing the contact lens. A fine, needle-thin electrode insulated everywhere except at the tip was introduced through a scleral incision, and passed across the vitreous through the hole itself, and into the choroid, which was thus successfully diathermised under direct vision.

Other interesting techniques were mentioned, but not demonstrated in the course of conversation. For example, diathermy of small folds blocking the lacrymal canaliculi, and the introduction of rubber tubing into the tear duct itself at the end of a wire for chronic lacrymal obstruction (Bangerter's method). (*Ophthalmologica*, p. 107, 1944.)

The wire is first passed like a probe from above, grasped below the inferior turbinate, and drawn out of the anterior naris by forceps.

Lausanne

This clinic is situated on a hillside with a beautiful view over Lac Léman. There are only 42 beds, but it looks larger than this, as it is joined to a blind people's home.

Though small, this school has been made famous by the work of Gonin on detachment, and a bronze plaque is erected to his memory in the Lecture Theatre. Gonin, Streiff told me, was the typical genius, dreamy in everyday things, and wrapped up in his work.

Professor Streiff, the present incumbent, comes of an ophthalmic family, his father being a pupil of Haab, later practised as an oculist in Geneva from 1905 to 1943. Streiff himself is a pupil of Franceschetti, and has all the wide surgical outlook of his teacher. He is particularly interested in lid plastics and keratoplasty. Our conversation was in French.

Keratoplasty.—He claims about 37 per cent. successes. He quotes Hata's ghastly case where glioma spread from donor to recipient (*Acta Soc. Ophthal. Jap.*, Vol. XLIII, p. 1763) for preferring a cadaveric donor.

While removing the remains of Descemet's membrane with fine curved " manicure " scissors, he protects the lens with a tiny silver " niblick." This instrument (invented by Arruga for protecting the lacrymal sac during dacrocysto-rhinostomy) was adapted by Franceschetti both for lens protection, and for separating synechiae during keratoplasty (Fig. 18*b*).

The 5 or 6 mm. grafts employed are always centred slightly to the inner side of the pupil. Their size obviates the necessity for pre-operative localisation of the pupil by transillumination.

Incidentally, Maurice Girardet, an oculist in Lausanne, unconnected with the clinic, has also invented several ingenious keratoplastic instruments. These include a ring for fixing the unexcised cadaveric eye while obtaining the graft (this avoids excision of the eye), deeply recurved scissors on a de Wecker mounting for removing Descemet remains, and a small " shovel " for transporting the graft itself. I am able to show the last, which he was kind enough to give me, and which I have found most useful in two cases since (Fig. 18*c*).

Girardet stresses that unfortunately the prognosis is best when the opacity in the recipient cornea is limited, and that grafts rarely remain clear when the corneal opacity is total. He has illustrated this point (*Jl. Suisse de Méd.*, Vol. XXII, p. 723, 1943) by beautiful colour photographs.

Black light.—Streiff employs " Black light " (ultra-violet) to localise dislocated lenses before, and capsular remains after, cataract extractions. I have been able to obtain the special bulb used (Typ. 57202/70 13 HPW Plhora 120 W. Philips), but have been unable to use it as " the screw lampholders are in short supply."

X-ray localisation.—Dufour, Streiff's assistant, has invented a

transparent protractor which can be applied to X-ray films taken of intra-ocular foreign bodies with a Goldmann's corneal ring (see Berne). This protractor (*a*) allows for the 10 per cent. distortion due to the spread of the rays, and (*b*) if the refraction is known or the corneal diameter estimated by keratometry for variations in size from the standard eye with refractive error.

" Chenilles Processionales."—I was unaware till shown photographs, that the caterpillars whose hairs cause such trouble in children's eyes, are processional, *i.e.*, form a long line one behind the other on a branch of the pityocampa pine. The French call them "Processionaires des Pins."

Retinal biomicroscopy.—Hruby's method (*Klin. Monatsbl. f. Augenheilk,* Vol. CVIII, p. 195, 1942) is employed to investigate " holes " in the disc and associated macular changes. This is a −55 O.D. (Busch) lens in a trial frame (Fig. 9), and with a diverted slit-lamp beam (Goldmann's prism) can be used for slit-lamp examination of the retina, without a contact lens. Streiff regards these changes as congenital, and was surprised to hear that a hole has been observed to follow a haemorrhage on the disc in England. Hruby's lenses are unobtainable in Switzerland, and this illustrated is a copy made to my measurements by Rayner & Co.

" Jake " toxaemia.—" Jake " (o-tri-cresyl phosphate poisoning) has been observed to cause papillomacular atrophy in a Lausanne French polisher, a point of interest in considering the effect of metabolic poisons on central vision.

On the other hand, it should be noted that Burley (*Jl. Amer. Med. Assoc.,* Vol. XCVIII, p. 298, 1932), describes temporal disc pallor and anaesthesia as signs differentiating disseminated sclerosis from this toxaemia when caused by ingestion of 2 per cent. of this poison in Jamaica ginger (Jake) extract.

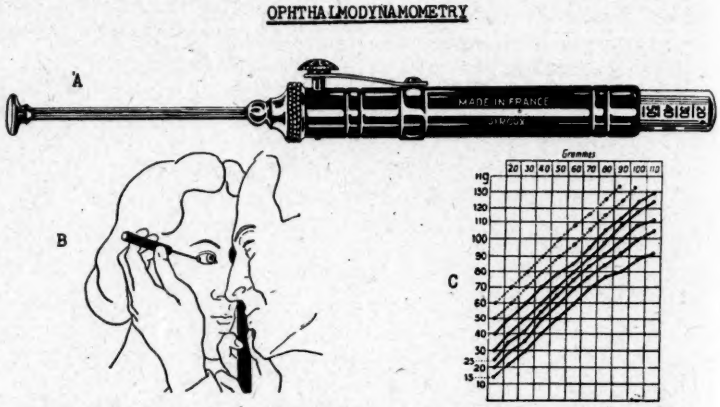
A large group of such cases was recorded elsewhere in Switzerland when 200 soldiers on a route march developed paraplegia or peripheral neuritis from food accidentally cooked in machine gun anti-rust lubricant. That so many men ate the mixture is an extraordinary tribute either to the culinary qualities of Swiss machine grease, or to Swiss Army discipline.

Tonoscopy or Ophthalmodynamometry.—Streiff is very interested in tonoscopy, and in fact has produced a book about it, " Der Retinale Blutdruck im gesunden und kranken Organismus " (Wien, 1946). Some of the component pictures of Fig. 10 are reproduced by permission from this, and some from the Giroux-Guilbert Routit catalogue. This technique of estimating the retinal blood pressure may be used clinically by a few Britishers, but if so I have never heard one mention it, much less stress its value.

The instrument usually employed by Streiff and others abroad, is the " Ophtalmo-Dynamomètre du Docteur Bailliart, à Bouton de serrage," No. 685 bis. Guilbert Routit et Cie (Fig. 11). This is a spring-loaded piston, with a rounded end, which is steadily pressed against the unanaesthetised conjunctiva overlying the insertion of the external rectus of a seated patient, until the arteries on the disc are seen by the ophthalmoscope to pulsate. Conjunctival cocainisation is only employed in the sensitive, and stress is laid on the site and steadiness of the pressure, an aim at the centre of the globe, and the tendency of the novice to get too high readings.

The button is then pressed to lock the instrument, and the pressure in grammes read on the scale by the light of the ophthalmoscope. This figure represents the diastolic pressure, and can be converted to mm. Hg by nomogram. The value is about 45 per cent. of the brachial diastolic when seated, *i.e.*, with a normal intra-ocular and normal blood pressure 28 grams = 35 mm. Hg.

If the pressure is kept up till pulsation ceases, *i.e.* till the artery



A. The Instrument. Makers: [illegible] of Paris, showing locking button and scale reading.

B. Mode of use according to Baillart, reproduced by permission of Professor Streiff, from "Der Retinale Blutdruck".

C. Magitot-Baillart Nomogram. The tonometric tension is first measured by tonometer. The point of intersection of the oblique line starting from the tonometric figure and the vertical line which gives the dynamometer reading in grammes, gives the blood pressure in millimetres of mercury.

FIG. 11.

collapses, the scale reading is regarded as representing the retinal systolic pressure. Franceschetti regards this figure as less important than the diastolic, and Dubois-Poulsen does not take it in arteriosclerotics for fear of causing permanent damage.

Although certain German authorities hold that variability of the observational norm invalidates the method, Streiff claims that :—

(1) variations of ± 10 gm. from the norm indicate abnormalities of intracranial blood pressure after a head injury, and may explain unduly persistent post-concussive symptoms.

(2) posterior fossa tumours do, and anterior fossa tumours do not raise the retinal pressure relative to the systemic.

(3) that the prognosis of hypertensive retinopathy is worse if the retinal pressure is relatively higher than the systemic.

(4) that the visual and cerebral symptoms of the " carotid sinus syndrome " intermittent visual fog, vertigo, blackout, and syncope, occur because the retinal diastolic (hence by inference, cerebral) blood pressure falls disproportionately, by 40 per cent. when the brachial falls 10 per cent.

The Carotid Sinus Syndrome.—Tschermak discovered that light massage over the carotid sinus (clinically the point of maximum carotid pulsation) produced as a rule either bradycardia, or a fall of 10 per cent. in the systemic blood pressure or both.

Some individuals are rendered hypersensitive by local arteriosclerosis, cervical tumours, digitalis, or certain neurasthenic states.

These people may develop the symptoms described above, on extending the neck in a barber's or dentist's chair, or even on blowing hard at a fire.

One such patient was horribly burnt by falling on a fire he was blowing. It was found he could produce a syncopal attack by blowing hard against the back of his hand.

Curiously enough, Streiff has found that a hypersensitive sinus often occurs on the same side as retinal thrombosis, embolism or macular oedema, and believes they may be somehow related.

Thrombosis so caused might have analogies with the " Stagnation Thrombosis " (which B. A. Klein associates with a sudden drop in blood volume after head injury, operations, or early hypertension).

I have described this technique at greater length than some might feel justified, as I feel there must be many of the same generation in this country who like myself know nothing about it.

It is difficult also to overlook either its wide acceptance abroad, or that a continental jury in 1945 awarded Bailliart the quinquennial " Prix de Gonin " for his work on the subject.

Geneva

Professor Franceschetti is already known to many Englishmen by his visits to the U.K. Congress.

A great deal of research has been carried out in this clinic, but its main interest to Englishmen will be the superlative surgery. The existence of other less well known clinics in the city explains the relatively small size (35 beds) which will shortly be increased by building to sixty, with a generous allowance of room for research laboratories.

Genetics.—In one laboratory I was shown the pedigree of the Glaser family, which has now been collected for thirty-five years, and covers four metres of paper.

Ludwig Glaser died in 1550 A.D. bequeathing severally to his descendants retinitis pigmentosa, retinitis punctata albescens, nerve deafness, and Friedreich's ataxia. Some inherited one, some more of these conditions, and Franceschetti believes a single defective gene is responsible for these varied defects.

Ocular Myology.—This is the only Swiss orthoptic department I saw which was fully equipped (with British instruments), and staffed by a wholetime orthoptist. There is such a department in Berne but I did not see it.

It is Franceschetti's interest in paralytic squint, however, which makes this clinic the centre of Swiss ocular myology, and prompts other clinics to refer difficult cases for diagnosis or treatment.

It seems to me that the vitality of the different national literatures on the treatment of ophthalmoplegia varies directly as the speed and efficiency of the test used to measure vertical deviation in the cardinal positions.

Duane's cover and parallax tests have obviously provided many American writers with a basis since the nineteen hundreds.

As the red and blue diplopia goggles, and Barlite, depend on the patient's powers of description, which are not always quick or accurate, and as the synoptophore only covers a limited zone of action, it was not until the 1930's that the extended use of the Hess co-ordimeter stimulated the British approach.

Franceschetti does not use Duane's test at all, and while not rejecting Hess's method entirely, has an approach based on four other devices of his own.

(1) *Franceschetti's Cyclophoromètre.*—The patient faces a tangent scale (known in Switzerland as the Croix de Maddox) at five metres, holding the cyclophorometer in front of one eye. In essentials this is a rotatable Maddox rod in a handle containing a spirit level (Fig. 12).

A trial frame is inadequate to hold the rod, as while the eyes fix the spotlight the head has to be strongly rotated to different

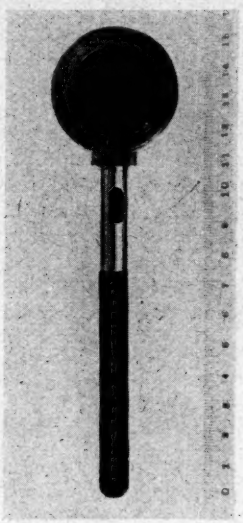


FIG. 12.
The cyclophoromètre of Franceschetti.

FIG. 13.
Testing of horizontal element in field of action of right inferior rectus and left superior oblique with "home-made" version of cyclophoromètre of Franceschetti.

angles (as suggested by Landolt), and tilted backwards or forwards.

In this way not only does the patient's statement of the relation of the red line to the scale figures establish the vertical and horizontal error in the cardinal positions, but by rotating the " rod " till it appears parallel (to him) with the horizontal arm of the scale he can indicate the varying cyclophoria at these angles.

A patient is shown holding a Leeds-made device of this type (Fig. 13) with the head angled to explore the action field of the right inferior rectus and left superior oblique.

I have found that even without the graduated protractor of the original device, the cyclophoria is much more obvious than the vertical error to a patient with a paralysed superior oblique.

I also find that one is apt to forget which quadrant is being tested, a difficulty that would be overcome, of course, by systematic use.

Franceschetti regards the following signs as of diagnostic importance :—

(*a*) the higher eye, the tilt of the false image, variation in diplopia with vertical movement, and " applied " lateral head tilt.

(*b*) vertical deviation with lateral movement, and uniocular limitation of movement are regarded as less important, while :—

(*c*) " compensatory " head tilt and horizontal deviation in vertical diplopia are considered positively misleading. He underlines this last point in his schèma.

(2) *Franceschetti's " schèma."*—Most mnemonics flounder in an attempt to reconcile that the maximal vertical (diagnostic) action of a muscle is exercised in the opposite direction to its horizontal component.

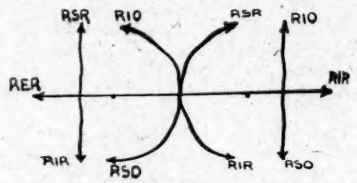


FIG. 14.

Franceschetti's schèma. "A mnemomic for the static and dynamic actions of the muscles of the right eye."

Franceschetti's schèma (Fig. 14) gets round this neatly by combining the " static " scheme of Marquez (which shows the action of the individual muscles from the primary position) with the " dynamic " scheme of Hess, which depicts the maximal vertical action in adduction or abduction.

The combined diagram thus summarises the change in action with 30° lateral traverse from the primary position.

At these angles (although cycloduction may still be of importance), van der Hoeve has shown graphically that the horizontal component is negligible or actually reversed.

(3) *The double Maddox rod test.*—Even the Hess screen may fail to distinguish between paralysis of the superior oblique on one side and the superior rectus on the other, when secondary contracture of the antagonist has confused the issue.

A red Maddox rod is placed in one trial frame cell, and a white one in the other. Unless they are spring clipped, as in the "Oculus" trial frame, a piece of plasticine may be necessary to hold them both firmly. The head is then tilted to either shoulder, while the patient fixes a spotlight. If the head is tilted toward the shoulder on the same side as the affected eye, the red and white lines separate vertically, and vice versa.

This replaces the Hoffman-Bielschowsky apparatus which in any case few surgeons are likely to possess, and by establishing the side of the lesion at once clarifies the diagnosis.

(4) *The Franceschetti "Tableau."*—The signs of diagnostic importance (A) resulting from the tests described, are applied to the table shown (Fig. 15) to identify the weak muscle.

During my trip I found this table in use in clinics as far apart as Lausanne, Marseilles, and Paris.

Vertical Deviation	The Red Line and Transverse of Tangent Scale converge :—	Vertical Error Increased by Including Head to :—	Paralysed Muscle	Maximum Vertical Separation	Maximum Convergence of Images	Contracted Muscle	Maximum Vertical Deviation
RIGHT EYE HIGHER:	To Right (internal rotators)	to R.	R.S.O.	L. & down	R. & down	R.I.O.	L. & up
		to L. (often neg.)	L.S.R.	L. & up	R. & up	L.I.R.	L. & down
	To Left (external rotators)	to R.	L.I.O.	R. & up	L. & up	L.S.O.	R. & down
		to L. (often neg.)	R.I.R.	R. & down	L. & down	R.S R.	R. & up
RIGHT EYE LOWER:	To Right (external rotators)	to L.	R.I.O.	L. & up	R. & up	R.S.O.	L. & down
		to R. (often neg.)	L.I.R.	L. & down	R. & down	L.S.R.	L. & up
	To Left (internal rotators)	to L.	L.S.O.	R. & down	L. & down	L.I.O.	R. & up
		to R. (often neg.)	R.S.R.	R. & up	L. & up	R.I.R.	R. & down

FIG. 15. FRANCESCHETTI'S "TABLEAU."

Cases when diagnosed are treated by prisms or surgery, as we do here. Cases of superior oblique paralysis have been operated upon successfully.

Recurrent aphthous iritis.—This is a recurrent hypopyon uveitis in young people, associated with oral aphthae or generalised erythema multiforme exudativum.

At the time of my visit this condition was scarcely mentioned in the English literature though it had been called Ophthalmitis Lenta by Gilbert and Recidivierende Hypopyon Iritis in Germany. A good deal has appeared in the English medical papers since.

Known in Turkey as Behçet's (pronounced Bayshett's) disease, Behçet had actually sent a case to Franceschetti for a second opinion at this time, though in absence of aphthae it looked like any other iritis. The eight cases seen by Franceschetti were characterised by oral aphthae, recurrent hypopyon, complete resistance to all treatment, and ultimate blindness, sometimes from micro-cysts at the macula.

The possible relationship to bovine foot and mouth disease (though there are no nail lesions), and recurrent equine ophthalmia, is of great interest in view of past discoveries regarding brucellotic uveitis, and Vail's recent work on the toxoplasma. I asked if sarcoidosis known there as the " Maladie de Besnier-Boeck " (pronounced Bayn-eay-Book) might also have an animal vector, but was told " no."

Corneal Grafts.—Of the 110 corneal grafts done by Franceschetti in the last few years, 32 per cent. obtained a visual increase of 10 per cent., 14 per cent. were improved to 6/60, 34 per cent. retained the visual status quo, and 20 per cent. actually had worse vision post-operatively.

Franceschetti while recognising the existence of this last group (sometimes overlooked by other writers on this subject) regards it as no deterrent, as he is prepared to regraft such cases. With a normal anterior chamber the graft and bed are the same size, with a flattened cornea the graft is cut 0·1 mm. larger.

Large (5 or 6 mm.) trephines are employed, with an adjustable piston to prevent undue penetration (Fig. 16).

The piston fits so well that it requires a specially drilled vent to prevent air compression, and the edge (see section on Schaffhausen) is better than anything available here. The cost at present is rather high (about £12 a pair).

Franceschetti prefers trephines to knives, and believes the Americans have been driven to a knife technique by inferior instruments.

He regards the prognosis as good in disciform and interstitial keratitis, the apical scar of keratoconus, and heredo-familial dystrophy.

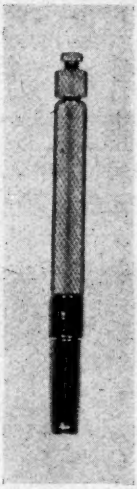


FIG. 16.

Franceschetti's trephine

I have been unable to trace a case history where the latter condition was grafted, and the graft invaded by the dystrophic process, but there seems to be a general belief in England and America that this always occurs.

Franceschetti disagrees, and produced as proof a farmer with Groenouw's type " B " dystrophy (see Fig. 20) grafted in 1935. This man had 6/9 and J.1 (uncorrected) in the better eye, and although the peripheral cornea was rough and the eyes irritable, there was no biomicroscopic evidence of invasion of the disc in either.

After I had examined him, the patient (obviously most grateful for the operative result) insisted on signing and giving me a little cyclostyled copy of his history. He had come to Geneva in 1935 to obtain a blind pension certificate, after four other hospitals had told him nothing more could be done.

Franceschetti has grafted thirteen similar eyes, and has employed the material to supplement Bückler's classification.

This successful approach stimulated me to base the table (Fig. 20) on facts from his papers, to show the constitution, location, depth and progress of the different types. Franceschetti was kind enough to correct it.

Recent senile cadaveric corneae are preferred, as the donor source, as he holds the graft to be merely a " scaffold," and the more inert the better.

The graft is stored up to seventy-two hours at 45° C. in holofusine (a sterile, pyrogen-free, isotonic Ringer type solution of essential blood salts, made by Haussman et Cie of St. Gall, but unobtainable here).

The solution is kept in a petri-dish and the graft is lowered into it on a small porcelain " strainer " with a central handle like an inverted mushroom. Fig. 17 which Professor Franceschetti kindly gave me.

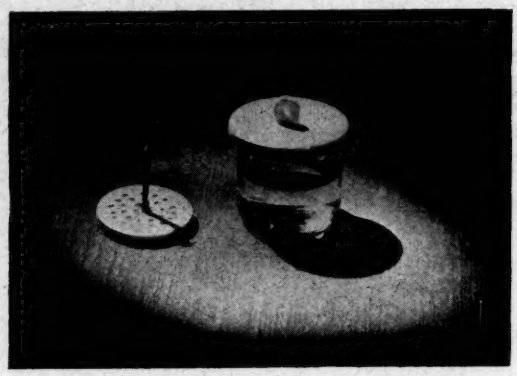


FIG. 17.

Corneal graft " strainer " Franceschetti.

As nothing of this shape is available here, and it is difficult to attach a handle to a porcelain filter disc, I got Thackrays to make a similar device out of chromium plated stainless steel.

Unless one has a " corneal bank " it is difficult to do a corneal graft just when one wants, so that Jean Nordmann " Chef de Clinique " at Strasbourg and myself had to wait until evening, when it was hoped a donor might become available.

The operation at 9 p.m. was a re-graft on a young man with interstitial keratitis, and 6/12 in the other eye.

A willingness to graft a bad eye when the other has good vision is, I feel, the acid test of a surgeon's belief in his technique.

Franceschetti, when operating, uses sterile linen gloves, retrobulbar anaesthesia, Arruga's speculum, scialytic lighting, and broad-toothed fixation forceps. A drop of pilocarpine is inserted half-an-hour before operation.

Four marks are made on the limbus at 12, 3, 6 and 9 o'clock, with methyl violet, and double armed sutures are inserted at these points.

Franceschetti's trephine (Fig. 16) cuts a very clean disc, and a thin remaining strand of Descemet's membrane was easily divided by Elschnig's " Hornhautmesser " (Fig. 18*a*) while the opaque

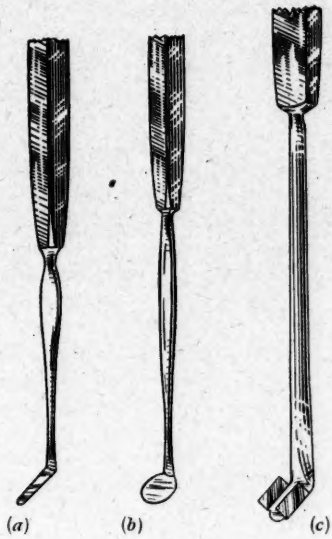


FIG. 18.

(*a*) Elschnig's " hornhautmesser."
(*b*) Franceschetti's " niblick."
(*c*) The " pelle " of Girardet.

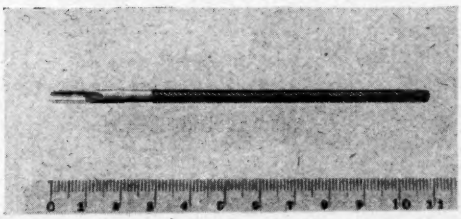


FIG. 19.

Franceschetti's gouge for removing Descemet remains.

disc was held in forceps, and the lens was protected by the little " niblick "-shaped silver spatula held by an assistant (Fig. 18*b*).

This instrument is then swept round the anterior chamber to detach any synechiae.

FIG. 20.—*Familial Corneal Dystrophies*

Classification — Bücklers Histology — Franceschetti

TYPE	APPEARANCE	SITE	ONSET	VISION	HEREDITY	HISTOLOGY
GROENOUW (A)	"CRUMB"		10	VARIOUS (3 cases)	DOMINANT	HYALINE DEGEN. OF BOWMAN'S MEMBRANE, SUB-EPITHELIAL BASOPH-IL GRANULES.
HAAB-DIMMER	"LATTICE"		16	BAD AT 50 (1 case)	DOMINANT	AS ABOVE BUT COARSER AND INVOLVING DEEPER LAYERS ALSO.
GROENOUW (B)	"SPOT"		1-10	VERY BAD (4 cases)	RECESSIVE	AS ABOVE + AN ALBUMINOUS DEPOSIT IN ALL CELLS OF THE CORNEA.
HURLER	+ OR — GARGOYLISM		BIRTH	MODERATELY GOOD. STATIONARY. OFTEN UNILATERAL.	RECESSIVE	DISSOCIATION OF LAYERS. LIPOID GRANULES IN THE CONNECT-IVE TISSUE.

The Hornhautmesser (Augenarztliche Operationslehre 1922: 525: Fig. 447) is an angled knife, with a blunt point and two lateral edges. The English reproduction (Fig. 18*a*) is by Down Bros.

Had any ungraspable Descemet tags remained attached to the edge of the trephine bed, they would have been divided against the "niblick" by a tiny gouge-shaped instrument (Franceschetti's) equivalent to about $\frac{1}{8}$ of the diameter of a 5mm. corneal trephine (Fig. 19).

Strands of Descemet's membrane rarely remain attached to the graft itself, but if they do highly curved scissors are to be preferred to the instruments above, as the pressure or traction necessary for their use might damage it. Though the cutting action of instruments for removing these strands varies greatly it should be noted that the most successful have a common feature—a curved cutting edge concentric with or of smaller arc than the trephine hole.

The graft was lifted out of the holofusine on its little "strainer," pushed on to the back of a metal lid spatula repositor, and from there to its bed by an iris repositor. The sutures were tied, argyrol inserted and the eyes double-padded. Time about 25 minutes.

Among the instruments in reserve were Arruga's forceps, which can be employed to put sutures directly through the graft edge at two points if there is a vitreous loss.

It is difficult to convey in a bald account of the technique the smoothness and absolute confidence of the whole procedure.

RETINAL ARTERY OCCLUSION

A Report Illustrating the Pathogenesis of the Fundal Appearances and the effect of Acetyl-choline*

BY

I. C. MICHAELSON

GLASGOW

THE following case is described because it illustrates:—

(1). The rôle of spasm in arterial occlusion and the effect of acetyl-choline;

(2). A relationship between arterial spasm and anatomical changes in the vessel wall;

(3). The nature of the retinal opacity with the influence of the capillary distribution in determining its extent.

* Received for publication, August 9, 1947.

The female patient, aged 41 years, was first examined on April 22, 1947. She then stated that the vision of the left eye had been defective since April 16 and that she had had headaches for several days following the onset of the visual defect. The vision of the left eye had previously been as good as that of the right.

On examination the right eye was found to be normal and to have a visual acuity of 6/9 with +4·50 D. sph. +1·50 D. cyl. 90°. The retinal vessels were free from any abnormality. The vision of the left eye was reduced to counting of fingers at about one metre. The pupil was slightly larger than that of the right eye, but reacted to light. The media were clear but the fundus showed a large triangular area of white opacity in the retina situated in relationship to the macular branch of the inferior temporal artery, as indicated in Fig. 1. The junction of the inferior temporal artery and its macular branch was obscured by a bright linear reflex. The white retinal opacity was very sharply defined below and above by the inferior temporal vein and its macular branch respectively. One very striking feature was that the affected branch of the inferior temporal artery was venous in colour where it became discernable beyond the retinal opacity. The rest of the fundus was normal and the retinal vessels showed no unusual features.

The diagnosis of occlusion of the macular branch of the inferior temporal artery was made and the patient was admitted to hospital. At 7.45 p.m. that evening the condition of the fundus remained as already noted and 0·1 gm. of acetyl-choline was injected retrobulbarly, atropine having been previously instilled into the eye. Fifteen minutes following injection the white opacity in the retina was noted to be markedly diminished and to be confined almost entirely to the area between the affected artery and macular vein. One hour later the condition was very much the same. The following day there was noticed no further change in the retinal opacity but the occluded artery at its junction with the inferior temporal artery could be seen for first time. It had a well developed central light streak. Fig. 2 shows the appearance of the fundus on the day following treatment with acetyl-choline. During the next few days the retinal opacity disappeared completely. Thirteen days after the onset of the occlusion and seven days after its relief with acetyl-choline a faint sheathing was noticed for the first time at the site of the spasm. It gradually became more apparent and Fig. 3 indicates its appearance on June 5. There was little visual improvement to parallel the ophthalmoscopic changes, but when last examined she could see the lower part of the letters of 6/24 line on Snellen's chart with +4·50 D. sph. and +1·0 D. cyl. There was no peripheral field defect using a 2/300 white object but there was a loss of the upper field to a 2/2000 white object on the Bjerrum

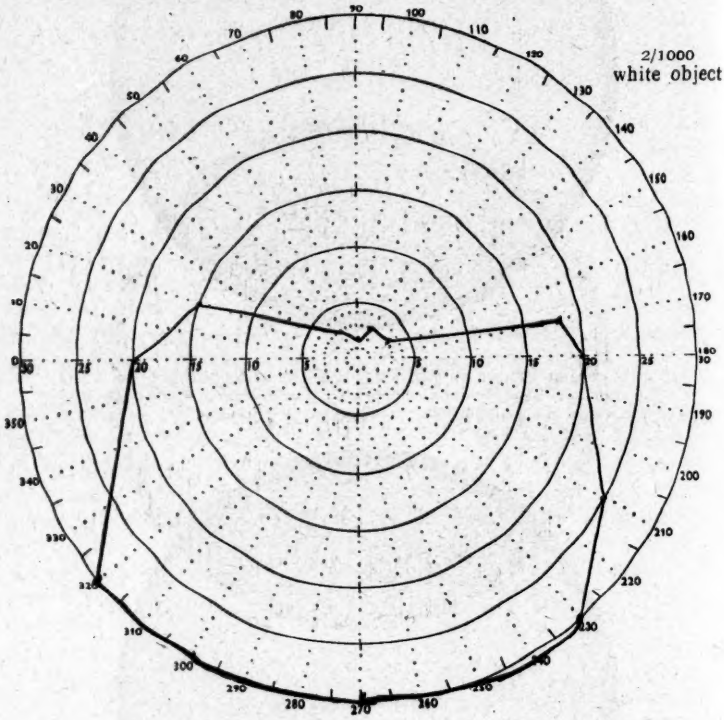
FIG. 1.

Appearance of fundus on April 22, 1947, showing the area of white retinal opacity sharply defined below by the inferior temporal vein and above by its macular branch.

FIG. 2.

Appearance of fundus on day following treatment. The area of opacity is markedly diminished and confined almost entirely to area between affected artery and the macular vein. Note that the affected artery has now resumed its arterial colour.

screen (see chart). A general examination was carried out by Dr. L. Scott. The blood pressure was found to be 120 mm. Hg systolic and 70 mm. Hg diastolic. Apart from a low haemoglobin estimate (64 per cent.) no abnormality was found. She gave an indefinite history of headaches which, however, do not appear to have been of the migrainous type.



Since Raynaud's observations in 1874, angiospasm has been repeatedly observed to be the cause of arterial occlusion in the retina. Apart from the elderly with hypertension and arterio-sclerosis the condition occurs in young or middle-aged individuals who may show other evidences of vascular irritability such as epilepsy or migraine, or in whom may be present vascular sensitivity to various factors, such as toxins from influenza, malaria, or pregnancy (Mylius 1928, Sedan 1929, Griffith 1931, Davenport 1931, Freeman 1933, Selinger 1937, and Schousboe 1937),

Arterial angiospasm may occur in young people who otherwise

have no evidence of vascular irritability. (Ormond 1918, Traquair 1933).

The present case belongs to this last group. The localised sheathing was not present until the seventh day following the relief of the spasm and its development to the stage noted in Fig. 3 was reached 43 days after the onset of the occlusion. The spasm had apparently occasioned the sheathing which, with the local narrowing of the blood column, probably indicates intimal proliferation and degeneration (Ballantyne, Michaelson, and Heggie 1938). The vessel wall spasm-proliferation relationship shown in this case is of

FIG. 3.

Appearance of fundus 43 days after onset of occlusion. At the site of spasm there is well-marked parallel sheathing of the vessel.

interest because it possibly illustrates in miniature a course of events, less acute but more diffuse, which may occur during the evolution of the general vascular changes of hypertension.

The beneficial effect of acetyl-choline on arterial occlusion due to spasm has already been noted by several observers. There is little doubt that acetyl-choline in this case relieved the spasm and restored the circulation. It is of interest there was no notable change in the diameter of the other retinal vessels following the injection, although search was repeatedly made. This lack of general response in the retinal vessels has been noted in two other patients treated with this drug. The localised effect of the drug on the spastic portion of one

vessel in the fundus and the absence of response by healthy retinal vessels appear to invalidate any conclusions regarding the efficacy of acetyl-choline in spastic occlusion which may be made from the negative findings of experiments on animals which have normal retinal arteries.

FIG. 4.

Portion of an injected human retina with artery above and vein below, selected as representing the triangular area of the capillary bed lying between the affected artery and the inferior temporal vein in the case described and because here likewise the ultimate arterial divisions (A) do not cross the vein.

The rapid disappearance of the white opacity suggests that it was due to oedema consequent on capillary stasis and anoxaemia resulting from diminished arterial inflow. Dunn (1940) has noted "that where an arterial supply is abnormally narrowed but not completely cut off, blood still passes to the vessel's natural territory under pressure at a less minute volume, and capillary engorgement in the area may be determined by this flow from the narrowed vessel itself even if there are no collateral anastomoses." During the

period of spasm the affected artery beyond the occlusion was filled to its normal width with venous blood (Fig. 1), and it would seem that de-oxygenated blood in the dilated capillary plexuses has found it possible to pass into the artery "below" the constriction because of the diminished pressure within it. The artery is occluded at a place where it crosses a fork formed by two veins and, as can be seen from Fig. 3, no branch from the affected vessel crosses either of these veins. Fig. 4 from an injected human retina illustrates the manner by which under these circumstances, the capillary territory served by the artery is limited by the neighbouring vein; and in the case under consideration the constituent veins of the fork. As a consequence the oedema arising from the capillary disturbance is exactly limited by the veins above and below the artery as illustrated in Fig. 1.

Summary

(1). A case of retinal arterial occlusion is described in which the cause was arterial spasm.

(2). The spasm continued for 6 days and was overcome with acetyl-choline.

(3). Localised sheathing of the vessel wall resulted from the spasm and was detected 13 days after the onset of occlusion.

(4). Acetyl-choline does not appear to affect noticeably the diameter of healthy retinal vessels in man.

(5). The white retinal opacity was due to oedema.

(6). The disposition of retinal capillaries determined the extent of the retinal opacity.

I am indebted to Mr. Gabriel Donald for his care with the illustrations.

REFERENCES

BALLANTYNE, MICHAELSON and HEGGIE.—*Trans. Ophthal. Soc. U.K.*, Vol. LXVIII (i), p. 255, 1938.
DAVENPORT.—*Trans. Ophthal. Soc. U.K.*, Vol. LI, p. 115, 1931.
DUNN, J. S.—*Glasgow Med. Jl.*, p. 132, 1940.
FREEMAN.—*Amer. Jl. Ophthal.*, Vol. XVI, p. 341, 1933.
GRIFFITH.—*Trans. Ophthal. Soc. U.K.*, Vol. LI, p. 122, 1931.
MYLIUS.—*Zeitschr. f. Augenheilk.*, Abhard, Vol. X, p. 1, 1928.
ORMOND.—*Brit. Jl. Ophthal.*, Vol. II, p, 273, 1918.
SCHOUSBOE.—*Buil. Soc. d'Ophtal., Paris*, Vol. XLIX, p. 112, 1937.
SEDAN.—*Ann. d'Ocul.*, Vol. CLXVI, p. 705, 1929.
SELINGER.—*Amer. Jl. Ophthal.*, Vol. XX, p. 56, 1937.
TRAQUAIR.—*Trans. Ophthal. Soc. U.K.*, Vol. LIII, p. 118, 1933.

ANNOTATION

Be sparing in praising and more so in blaming

The title of this month's annotation is taken from the Fourteenth Century allegory, the vision of Piers Plowman, A.D. 1362. The actual wording often varies. Benham's Dictionary of Quotations gives it as above and adds a Latin edition, ***parum lauda, vitupera parcius;*** but does not tell us from what author it is taken. Maybe it will be found in some early father of the church or perhaps in monkish Latin. We do not think it occurs in the Vulgate. Cicero's ***parcius dicere de laude alicujus*** gives the essence of the first part of the proverb, but he does not appear to have included the blame.

When dealing with praise or blame we are reminded of the old instruction to the novice when performing tracheotomy; keep in the middle line. Animate and inanimate matter are comprehended in the question. For instance we can blame or praise a person or persons or a thing or things. Into the last category comes the reviewing of books. You can praise or blame yourself and others can do it for you. Self-praise is always most obnoxious and we have Sterne's authority for saying that Dr. Joseph Hall, Bishop of Exeter, in the year 1610 gave his opinion "that it is an abominable thing for a man to commend himself." At public gatherings and in proposing healths Sir Anderson Critchett once laid down a sound rule of conduct when he said in proposing a health that he always tried to remember that his business in so doing was to toast and not to butter.

No one can object to a modicum of praise when a health is being proposed, but too much laudation makes the victim feel uncomfortable. Even Samuel Johnson, who, it is said by a strange slip in proof reading, once figured on the printed page as the great *Chum* of Literature, got tired of the persistent flattery administered in his presence by an eminent literary lady and told her to stop it. She has been identified in the notes as probably Miss Hannah More.

In book reviewing it is just as well to be tolerant and not to praise or blame too freely. No book is so bad but that some good thing can be found in it is a maxim as old as Pliny. Manifest errors are fair game, but on debateable points we should not blame an author because we happen to disagree with him. Heterodox opinions do sometimes get into print. Occasionally they are due to faulty proof correcting. This is perhaps not so likely to occur in an ophthalmological treatise as, shall we say, in a list of historical dates. Suppose a case in which the date of the Black Death of 1348/49 gets entered by an error as 1548/49. We are then two hundred years out. We all know how very easy it is to pass a

"five" for a "three" unless we have all our wits about us. Should such a slip occur we prefer to look upon it as a slip and not ascribe it to ignorance.

In dealing with patients, it is a truism to say, as we have observed on previous occasions, that they sometimes invert the sequence and blame us for things we could'nt help and, more rarely perhaps, praise us for some result when we know in our heart of hearts that we have deserved blame rather than praise. Say what you like, no one objects to praise in moderation. Blame is not so easy for us to be satisfied with; but there is one occasion in which the person blamed may derive an unholy gusto, and that is when he can prove the blamer to be wrong. A very early experience of the writer's was of this nature. We had just come into residence as house surgeon and had to assist one of the assistant surgeons who was not normally attached to our firm. The operation was that of complete removal of the breast. We were subjected to a running fire of caustic criticism until, about a third of the way through, we were asked why in heaven's name we did not put a clip on that vessel. The vessel in question was the intercosto-humeral nerve and we protested that an artery forceps there was out of place. The rest of the operation was completed in silence, and we thanked God that he had allowed us to remember this elementary anatomical point.

THE OPHTHALMOLOGICAL SOCIETY OF AUSTRALIA
(British Medical Association)

Annual Meeting

THE seventh annual general and scientific meeting of the Ophthalmological Society of Australia (British Medical Association) was held at the Royal Australasian College of Physicians, Macquarie Street, Sydney, on September 23, 1947. Dr. Darcy A. Williams, the President, in the chair. Those present included three members from Queensland, thirty-seven from New South Wales, thirteen from Victoria, two from Tasmania, four from South Australia and one from Western Australia.

President's address

The President, Dr. Darcy A. Williams, after welcoming such guests as had been able to attend, addressed members upon the subject of early ophthalmologists in Australasia and upon the associations of ophthalmologists with Australasian medical congresses. Amongst the early ophthalmologists mentioned by the

President were James T. Rudall, Andrew S. Gray, T. Aubrey Bowen, Charles Gosse, Thomas Evans and W. Odillo Maher.

The gradual growth of ophthalmology was traced and the manner in which it kept pace with changes overseas was described. An endeavour was made to salvage from the past valuable material and interesting and at times amusing anecdotes.

Research technique and training overseas

N. M. Macindoe (Sydney) who had recently returned from a visit to Europe and the U.S.A. where he had made close enquiries into subjects of ophthalmological interest, read two papers, accompanied by fifty illustrations, showing recent advances in research and technique, and trends in organisation and training abroad. At Boston research was concerned with the subject of steamy cornea, optic neuritis and the visual acuity of moving objects; at Johns Hopkins with virus diseases and sympathetic ophthalmia; at New York with colour vision; at London with paretic strabismus; at Copenhagen with colloidometry; and at Stockholm with chromatic light and electro-retinograms. At Zurich work was being done on corneal distortion, subjective screens for central scotomata, perimetry, slit-lamp examination of the fundus, the content of the pathological aqueous, tonometry and ciliary permeability. New technique described included gonioscopy, drug treatments, radio-active iodine, scleral resection in myopia, corneal grafting, glaucoma, cataract and retinal detachment operations.

The section on training was a reasoned appeal for more apprenticeship and fewer academic examinations. The continental clinic system was described and the suggestion put forward that we copy the American type of organisation in our big centres.

An outline of orthoptics in New South Wales

Miss E. Russell read a composite paper expressing the general opinion and experience of five senior practising orthoptists. The practice of orthoptics by orthoptists began in Sydney in 1933. At the present time eleven orthoptists were working in hospitals, intermediate clinics and private practice, and an average of 576 treatments were given each week.

In the early years, squint formed the great majority of cases, prisms being used for phorias as a general means of relieving or attempting to relieve symptoms. While the treatment of strabismus went on in growing numbers, the realisation of the great benefit orthoptic treatment was to phorias and their allied types had widened this field amazingly. Phorias of all types were receiving increasing attention since these were the cases where distress might

be acute. Orthoptists felt that their greatest battle was still with strabismus and it was there that they did their toughest job. They had learnt during the years to assess the relative possibilities of success with the different types. With all types suppression was their greatest enemy.

As regards convergent squints, true accommodative cases responded to treatment only and borderline squints needed surgical help. Tonic squints required orthoptics before and after surgery. Congenital cases were often successfully treated.

The treatment of divergent squint was less difficult. With all cases of strabismus orthoptic investigation was important before surgery to assess the binocular condition, *i.e.*, abnormal projection, etc. Suppression was their greatest enemy. Occlusion was their greatest ally. Treatment had been speeded up generally. There would always be cases, difficult in themselves, and rendered more so by mental dullness, inability to concentrate, frail health and indifferent parental co-operation, where treatment would be lengthy which eventually could be cured or greatly improved. As long as definite progress was being made they felt treatment should continue.

The selection of patients for orthoptics: some remarks:—
John Antill Pockley. Sydney

Some factors in the selection of cases for orthoptics were indicated. It was concluded that the personality of the patient and parent was of first importance in the selection of many cases and that in adults many phorias arose from psychogenic causes. It was desirable to aim at the earliest possible cure and when conditions were suitable operation should be early. Waiting for your children to reach orthoptic age was undesirable. A close liason between ophthalmic surgeon and orthoptist was essential.

Two cases of choroidal melanomata with unusual histories

Dr. Kevin O'Day (Melbourne) read a paper on two cases of intraocular tumours of unusual interest.

The first was a malignant melanoma of the choroid. Four years before the eye was finally removed, the patient had been advised by four ophthalmic surgeons that removal was necessary because of a malignant tumour. Even after four years the tumour was not very large. The eye was slightly inflamed, but there was no evidence of glaucoma. Very little pigment was present in the tumour. There was a metastatic nodule at the root of the iris. The tumour was of mixed-celled type with many thin-walled blood sinuses. Mitotic figures were very difficult to demonstrate. Wilder's stain demonstrated dense reticulin in the base of the tumour, with very little at

the summit where it had broken through Bruch's membrane. Wilder was of the opinion that the prognosis was better in tumours with a dense reticulin. The speaker suggested that this stain should be done on every case in which the eye was excised because of its probable prognostic significance.

The second case was a retino-blastoma in a man aged 29 years, an unusual age for this tumour. The patient gave a history of loss of vision, and pain in the eye after an injury at football. When first seen the vision was reduced to hand movements in the temporal field. The tension was raised and the anterior chamber full of blood. After cyclodialysis the pain and the tension were relieved and the man went back to the country. He returned a year later with the history of a further blow at football, and the eye completely blind and painful. The tension was raised and the eye-ball enlarged with a ciliary staphyloma on the temporal side. The anterior chamber was full of blood. The eye was excised. When it was opened, the tumour was found to involve the retina, the iris, ciliary body and the anterior chamber. A cyclitic membrane was present, and the tumour cells were growing along this. A portion in the ciliary body was anaplastic, but sections of the retina demonstrated the mantles of cells surrounding vessels, typical of retino-blastoma. Actively growing areas alternated with necrotic ones. There was no evidence of extra-ocular extension, although mitotic figures were very numerous.

The treatment of dendritic ulcer

Dr. Frank Phillips (Hobart) described his treatment for dendritic ulcer, which included removal of the damaged tissue with blotting paper and the use of a dental drill on the more resistant areas of ulceration. He maintained that his treatment was better than the customary methods.

Endothelial dystrophy

Dr. Clifford S. Colvin (New South Wales) described a case of endothelial dystrophy in a female patient aged 62 years. The case showed improvement after glandular and vitamin therapy. Dr. Colvin concluded his paper with an illuminating discussion on this uncommon and interesting condition.

Dry Eyes—a further contribution to their study

Dr. J. Bruce Hamilton (Hobart) gave a paper on the subject of kerato-conjunctivitis sicca, amplifying his paper read before the Society in 1940 (Transactions, Vol. XI). He reported another 24 cases and described their treatment, which had generally satisfactory

results. Dr. Hamilton discussed the differential diagnosis of the condition and its relation to Mikulicz's disease, Plummer-Vinson syndrome and iodide mumps.

He pointed out that the disease was of great interest in its possible association with other common morbid processes.

Allergic sensitivity to procaine hydrochloride and the hypodermic injection of cocaine hydrochloride — a personal experience

Dr. Arthur D'Ombrain (Sydney) dealt with the characteristics of drug allergy and he gave a harrowing personal experience of dermatitis due to procaine. He maintained that collapse from cocaine injection was really an outright poisoning and not an anaphylactic reaction. He related personal experience in the use by injection of 0·75 per cent. cocaine hydrochloride, over a period of six years. Dr. D'Ombrain's opinion was that cocaine could be injected with safety, provided a correct concentration and dosage were used.

Eye protection in industry

Dr. A. L. Tostevin (Adelaide) stressed the necessity for greater co-operation between oculists, industrialists, lighting engineers, architects, the Nation Safety Council and the Standards Association in regard to, not only the protection of eyes in industry, but also in the field of sight testing and correction of vision of employees.

Examples of eye injuries in the various large industries were given and reference was made to the I.C.A. Safety Council as a guide to industry towards protecting the worker and improving his efficiency. Emphasis was placed on the fact that most of the metal industries showed that 50 per cent. of the lost time from accidents was due to eye injuries.

Dr. Tostevin surveyed the research work being carried out in Australia and also the measures to be taken in prevention of eye injuries generally.

A Case of partial thrombosis of the central retinal vein treated by dicoumarin

Dr. R. G. Banks-Smith (New South Wales) gave extracts from available literature on this subject. The types of this condition were described and indication was given of those types in which treatment might be successful.

Dr. Banks-Smith submitted a case report in which partial success was claimed and he issued a warning as to the possibilities of over-dosage.

Radon treatment of intra-ocular tumour

Dr. W. Lockhart Gibson (Brisbane) sketched a short history of the various methods of radiation that had been used, and drew attention to the value of active co-operation of the biophysicists with the radiotherapists in working out accurate dosage. He described the use of a radon seed bent into the form of a circle with a spoke in it and moulded to the curve of the globe of the eye. Dr. Gibson claimed that such a seed was easy to suture in position, and could be arranged to give an accurate dosage to the tumour and as little radiation as possible to those parts of the eye which were so extremely sensitive to radiation.

Charts of isodosage were exhibited and the treatment of a child with two tumours in its only eye was described.

The Lagrange operation—a summary of sixty cases

Dr. J. A. O'Brien (Melbourne) presented a summary of sixty cases of Lagrange operation for glaucoma. He explained various modifications of technique. His results with complete or button-hole iridectomy were similar and his percentage of successful operations totalled eighty-five.

A preliminary survey of ophthalmic diseases in Western New South Wales

Dr. K. B. Redmond (New South Wales) analysed two thousand case records of patients in Western New South Wales, taking into account the geographical area of residence and evironmental conditions of life and work. The areas included part of centre tablelands, the central western slope and the western plains. He concluded that factors of sunshine, dryness, glare and dust were important. He presented a table of ophthalmic diseases and their percentage incidence.

Non-magnetic metallic intra-ocular foreign body

Dr. Lennox Price (Newcastle) said that in civil practice it was unusual to meet a case of penetrating wound of the eye with a retained intra-ocular foreign body which was metallic and yet non-magnetic. Under war conditions, on the other hand, such cases occurred more commonly.

Reports were given of two cases of this type which were treated within a few weeks of each other. The histories, clinical features and results in each case were compared and contrasted.

Optic neuritis following measles

Dr. T. C. Meurer (New South Wales) dealt with optic neuritis and post-neuritic optic atrophy following measles. He said that the condition was a result of an encephalomyelitis which occurred late in the course of measles usually when the rash was beginning to fade. The resulting optic atrophy did not appear to have any relation to the severity of the encephalomyelitis or the severity of the attack of measles. Three cases were reported and a review of the literature presented.

Social

The annual dinner was held at the Royal Automobile Club of Australia and was attended by forty-two members and guests.

On the evening of the opening day a cocktail party was given at the Wentworth Hotel by the Ophthalmological Society of New South Wales to members and their ladies.

The President offered the congratulations of the Society to Dr. J. Bruce Hamilton who had been appointed President of the Section of Ophthalmology of the British Medical Association Congress, Sixth Session, Perth.

Dr. Hamilton was also congratulated on his election as President of the British Medical Association, Tasmanian Branch.

Annual General Meeting

The annual general meeting dealt with general business. Dr. Claude Morlet was elected President for the ensuing year, and Dr. Arthur H. Joyce, Vice-President.

It is proposed to hold the eighth annual general and scientific meeting at Perth in conjunction with the British Medical Association Congress Sixth Session, August 15 to 21, 1948.

CORRESPONDENCE

COLOUR VISION IN THE CONSULTING ROOM

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—It is not important to argue further on the differing incidence of defective colour vision in the normal male population and in the series examined by Dr. Neubert. All I wished to do in this connection was to suggest an alternative explanation to that offered by the original author. This can hardly be classed as illogical.

The matter of fundamental importance is the interpretation of the data obtained from a completely unstandardised lantern. If one compares the results obtained with a single light lantern, and a lantern with three lights, the most obvious difference is the introduction of simultaneous contrast. If, in addition, one adds the variability of a rheostat control of illumination then without examining a single patient it is reasonable to suppose that the results obtained with the two types of lantern would differ. This is the conclusion one can reach while seated in an armchair by the fire and the results given by Dr. Neubert add nothing of value to this theoretical deduction so long as no attempt to standardise the lantern is made.

Yours sincerely,

JOHN GRIEVE.

MEDICAL SCHOOL, DUNDEE,
November 10, 1947.

[Dr. F. R. Neubert does not consider a reply is necessary.]
This correspondence is now closed.—Editors.

POST-OPERATIVE SECURITY IN CATARACT CASES

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—With reference to Mr. A. J. Boase's letter in your December issue: I quite agree that a hyphaema may possibly form and be absorbed before the conjunctiva retracts and so escape notice. I have a feeling that the well-being of the patient should take a second place to statistics.

On the point that Mr. Boase raises regarding the possible failure to observe a hypopyon early, I can only say that I have had no infection in any of my cases as yet, but should it occur I would expect to observe the usual accompanying symptoms of pain or discomfort, chemosis, etc. These would be definite indications for cutting the purse-string suture in order to examine the anterior chamber.

A further point with regard to the purse-string suture which appears to be worth mentioning is that, if silk or nylon is used the suture has to be cut—at whatever day the surgeon decides—whereas with the original catgut suture, nature will do her own work.

Yours faithfully,

T. G. WYNNE PARRY.

69, HIGH STREET,
BANGOR, N. WALES
December 15, 1947.

NOTES

Death

AS we go to press we learn with deep regret of the death of Sir Henry Lindo Ferguson, C.M.G. of Dunedin, New Zealand. We hope to publish a memoir of him in a later number.

* * * *

Honour

IN the New Year's Honours List we are pleased to see that Air Commodore P. C. Livingston receives the C.B.

* * * *

The Ophthalmological Society of the United Kingdom. Annual Congress, 1948

THE Annual Congress of the Ophthalmological Society will be held at the Royal Society of Medicine, 1 Wimpole Street, London, W.1, on April 8, 9 and 10, 1948.

The subject for discussion will be "Subjective Disorders of Vision (excluding those due to local ocular disease)," which will be opened by Dr. Macdonald Critchley, Professor Henry Cohen and Mr. J. H. Doggart. Members who desire to take part in the subsequent discussion are not required to intimate their intention before the Congress. It is emphasized that no member may speak for more than ten minutes.

On this occasion the Bowman Lecture will be delivered by Professor Marc Amsler, Zurich.

Members wishing to read papers are asked to send the titles to Mr. Lyle as soon as possible. Abstracts of papers, which will be circulated at the Congress and subsequently to the leading ophthalmological journals abroad, should be submitted not later than January 31, 1948.

On Friday afternoon there will be a joint Clinical Meeting with the Ophthalmological Section of the Royal Society of Medicine at the Ophthalmic Institute, Central London Ophthalmic Hospital, Judd Street, London, W.C.1. Those who wish to show cases are asked to communicate with the Registrar-Tutor, Mr. H. Ryan, at the Hospital.

The Annual Dinner will be held at the Royal College of Surgeons on Thursday, April 8. Owing to official restrictions the numbers on this occasion will be limited to 100, and it is regretted that it will not be possible to allow members to bring guests.

On account of the difficulty in obtaining hotel accommodation in

London, all members who will require it are advised to make their arrangements in good time.

Honorary Secretaries { E. F. King (Council Business)
T. Keith Lyle (Congress Business)

THE Society holds a considerable stock of certain volumes of the Transactions since their first publication. The following years, however, are not available :—

1897 ; 1898 ; 1899 ; 1900 ; 1901 ; 1902 ; 1905 ; 1906 ;
1907 ; 1908 ; 1909 ; 1911 ; 1917 ; 1918 ; 1919 ; 1920 ;
1921 ; 1922 ; 1923 ; 1924 ; 1926 ; 1927 ; 1928 ; 1929 ;
1930 ; 1931 ; 1932 ; 1933 ; 1934 ; 1935 ; 1937 (Part I).

The Council feels that many libraries, both at home and abroad, may wish to complete their sets and will be glad to present to Libraries, Medical Schools and Hospitals such available volumes as they may desire. No charge will be made other than the cost of postage.

Those interested are asked to communicate with The Bowman Librarian, The Royal Society of Medicine, 1, Wimpole Street, London, W.1.

* * * *

Sociedade de Oftalmologia de S. Paulo.

THE following are the officers for the year May, 1947 to May, 1948. *President* :—Dr. Benedito Paula Santos Filho ; *Vice-President* :—Dr. Plinio Toledo Piza ; *Secretary-General* :—Dr. Paulo Braga Magalhães ; *Secretary* :—Dr. Rubens Belfort Mattos ; *Editor* :—Dr. Alcides Del Ciello ; *Treasurer* :—Dr. Aureliano Fonseca.

* * * *

Ophthalmological Society of Egypt

THE Annual Meeting of the Ophthalmological Society of Egypt will take place at the Memorial Ophthalmic Laboratory, Giza, Egypt, on Friday and Saturday, March 12 and 13, 1948, at 9 a.m. Medical practitioners, oculists or otherwise, are cordially invited.

* * * *

Oxford Ophthalmological Congress

THE next meeting of the Oxford Ophthalmological Congress will be held in Oxford, July 8 to 10, at the School of Geography, Mansfield Road. Accommodation for members has been arranged at Hertford College. The officers of the Congress are; Master, F. A. Williamson-Noble ; Deputy Master, F. A. Anderson ; Editorial Secretary, L. P. Jameson Evans ; Hon. Secretary and Treasurer, I. C. Fraser, 12 St. John's Hill, Shrewsbury.